

**CALIFORNIA OBESITY PREVENTION INITIATIVE  
HEALTH SYSTEMS WORK GROUP**

**OBESITY PREVENTION FOR HEALTH CARE SYSTEMS  
EXECUTIVE SUMMARY & LITERATURE REVIEW**

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## INTRODUCTION

Over the past 20 years medical and public health professionals have become increasingly concerned about the rising rates of overweight and obesity in adults. Greater than one-half of the American adult population is now considered either overweight or obese. In addition, over the past 20 years the rates of overweight have doubled in children and teens. Furthermore, recent studies also indicate rising rates of obesity in senior populations.

Overweight and obesity have been documented in research to be associated with increased risks for diabetes, coronary artery disease, osteoarthritis, sleep apnea, and some forms of cancers. The development of programs to promote healthy weight has been compromised by media's use of very thin models to market products. Health professionals are confronted with educating a society that is exposed to media with conflicting messages; "supersized" meals appear in contrast to images of thin celebrity models. Health care providers can play an important role in identifying those at risk for obesity and in providing treatment strategies for weight management. However it should be kept in mind that the promotion of healthy eating and physical activity should also be addressed from a community and environmental perspective as well.

The California Department of Health Services formed the California Obesity Prevention Initiative (COPI) in 2000 as part of the Centers for Disease Control and Prevention's national effort in this area. The COPI Health Systems Work Group was formed to work collaboratively with Medi-Cal Managed Care health plans, hospitals, providers, and academic institutions to conduct a needs assessment and start strategic planning for obesity prevention as it relates to health care systems. The following evidence-based literature review is part of that effort and it is organized into the following sections:

- Physical Activity
- Diet
- Behaviors
- Weight Management
- Pediatrics
- Economic Burden

The literature review has devoted extra attention to evidence-based articles related to physical activity as this has been an area of need identified by a survey of Medi-Cal Managed Care health plan medical directors. The Pediatrics section is limited because the UC Berkeley Center for Weight and Health has compiled a very comprehensive literature review on pediatric obesity. It is available on their web site at [http://www.cnr.berkeley.edu/cwh/PDFs/Full\\_COPI\\_secure.pdf](http://www.cnr.berkeley.edu/cwh/PDFs/Full_COPI_secure.pdf). Also, this literature review currently does not address pharmacological and surgical treatments of obesity in detail.

## METHODOLOGY

In August of 2001, the California Department of Health Services' COPI Health Systems Work Group, with the assistance of the Centers for Disease Control and Prevention (CDC) conducted a literature review as part of a needs assessment related to health care obesity prevention services. The search was conducted on MEDLINE with Ovid Technologies. The search was restricted to human, English language articles from 1991 to 2001. The following terms were used to narrow the search: effective evidence-based studies on weight management, nutrition, and physical activity programs in the medical setting and for health plans. Additional terms used were: obesity, nutrition, exercise, physical fitness, randomized controlled, primary care, family practice, physician-based or delivered, and managed care programs.

Abstracts were reviewed and select articles were retrieved from the UC Berkeley School of Public Health Library and the CDC library. The COPI Health Systems Work Group then reviewed all the selected articles and compiled summary information from intervention, review, and commentary articles in the grids provided in this document. It was decided that formal ranking of all articles was beyond the scope of this review. However several of the articles are based on extensive evidence-based reviews of the literature, including adult and pediatric weight management, in addition to physical activity interventions, and diet therapies for obesity. Fifty-eight articles were reviewed and key findings and recommendations are summarized in the Executive Summary.

## EXECUTIVE SUMMARY

### Main Points:

- Research articles reviewed for this study indicate that many providers are not counseling their overweight and obese patients about nutrition and physical activity.
- In general, providers require additional training and resources for physical activity, diet, and behavioral counseling in order to successfully treat their overweight or obese clients.
- Although physical activity has been found to be an important contributor to losing weight there is still insufficient evidence that provider counseling about physical activity, in and of itself, is effective. However a recent report released by the Task Force on Community Preventive Services strongly recommends individually adapted health behavior change programs for physical activity behaviors (MMWR, 2001).
- Physicians seem to be most effective as the initial advisors, facilitators and referral venues for physical activity assessment and promotion.
- Brief (2-5) minute primary care-based physical activity counseling is feasible for most physicians.
- There is good evidence to show that calorie reduction contributes to weight loss and that a moderate fat, balanced nutrient diet is optimal for ensuring adequate nutritional intake.
- Low-energy density diets can encourage long-term weight loss maintenance because a variety of foods can be included in the diet, permitting satisfying food portions.
- An optimal weight loss diet is one that maximizes loss of body fat and minimizes loss of lean body mass.
- Several studies indicate that a team approach with long term maintenance and follow up is most effective and that patients can benefit by the inclusion of dieticians, health educators, and other support staff in their weight management programs.
- Overweight and obese clients must also be willing to change their habits and expert opinion suggests that providers should consider evaluating their clients readiness to change using the Transtheoretical Model as a guide.
- Additional research into the effectiveness of weight management strategies in a variety of health care settings is necessary to provide further information as to the most successful culturally appropriate approaches for diet, physical activity, and behavioral interventions.

## **Physical Activity**

### **Summary of Findings**

#### **a.) Physician Practice**

1. The most common barriers reported by physicians to counseling their patients about physical activity are lack of time, lack of knowledge of effective counseling techniques, lack of knowledge of current physical activity guidelines, and lack of reimbursement for physical activity counseling services (9,15,23).
2. Several studies indicated that a) physicians feel unsuccessful in changing patients' health-related behaviors (23), b) physicians believe that patients are unlikely to follow their advice (9), c) physicians are more likely to advise patients whose health is already compromised (8), and d) physicians feel advice is most effective when linked to a presenting complaint (9).
3. After 1-2 one-hour training sessions, many physicians can and will modify their practice to address lifestyle factors effectively and consistently (1).

#### **b.) Patient Issues**

1. Two studies indicated success with primary care-based physician counseling for physical activity with female patients (4,22). In addition, patients with chronic disease show the highest level of readiness to change behavior and may be more sensitive to physician counseling (2). Studies to date indicate men, older persons, and smokers may be less likely to respond (4,22).
2. Those studies that included individual tailoring of the intervention were found to be more successful (20). Being able to assess and consider a patient's readiness to change, physical activity preferences, previous physical activity experiences, etc. seems critical to greater effectiveness.

#### **c.) Review Papers**

1. Three review papers have been published (4,5,20). Each offered a slightly different conclusion based on the studies that were reviewed. One stated that primary care physical activity counseling is moderately effective in producing short-term (1-3 month) improvements (4). Another found that primary care-based physical activity counseling can be effective (13 of 24 studies reviewed showed significant short-term changes in cardiovascular fitness or physical activity level in the experimental groups) (20). The other concluded that there is limited evidence that physical activity counseling is efficacious in promoting change (based on the finding that short-term changes are not maintained) (5).
2. Regardless of the summary conclusion, each paper found follow-up to the initial physician advice as essential to increasing efficacy and promoting long-term maintenance of physical activity behavior. Follow-up could include phone calls, social support, direct mailings, additional office visits, etc.



#### **d.) Research Issues**

1. Many different methods and intervention approaches have been used among studies making it difficult to compare results (20). Some studies used weak experimental design (e.g. no randomization). Follow-up procedures were often not reported.
2. Office characteristics that promote efficiency and success for both the physician and patient have not been systematically studied.
3. Cost effectiveness has only been peripherally addressed and requires further study.
4. A high degree of disagreement has been found between patients and physicians, as to whether or not patients received physician advice for physical activity (8). Most patients indicate they did not receive such advice, most physicians state that they did indeed provide such advice. This level of disagreement is not well understood.
5. The “intensity” of the intervention needed to promote long-term change is unknown and requires further study.

#### **Overall Impressions and Recommendations**

1. Brief (2-5 minute) primary care-based physical activity counseling is feasible for most physicians.
2. Many physicians can become confident and efficient in using a pre-determined protocol.
3. Women seem to be sensitive to this approach and could serve as examples for others (husband, children, and friends) (22).
4. After training, follow-up support is needed for physicians and their staff to address logistical concerns, challenges, etc.
5. A physician seems to be most effective as the initial advisor/facilitator/referral mechanism (1,17,19). Organized follow-up should be provided and supported by other health profession staff (e.g. health educator, dietitian, and nurse). Thus, an integrated system of intervention is required for optimal benefits to the patient.
6. Primary care-based, interactive health communications systems hold great promise in assisting the physician in assessment and counseling for physical activity behavior change (17,19).

A coordinated systems approach to behavior change is needed. Given the limited evidence of clearly successful interventions, pilot projects are needed to test proposed systems of care. Until more studies are conducted to refine the elements of this approach, it may not be wise to invest substantial money and time into widespread dissemination. However, pilot projects that could add to the body of literature and the refinement of medical practice may be beneficial.

It is essential to realize that physician interventions should not be the sole method of promoting physical activity. Primary care physicians and other health professional staff can play an important role in conjunction with physical activity programs at worksites, mass media campaigns, increased public resources, improved access to physical activity facilities, and various incentives. It may be productive to develop and implement a primary care-based physician intervention to promote physically active lifestyles to patients of all ages, in partnership with an ongoing community-wide physical activity program.

## **Diet**

### **Summary of Findings**

#### **a.) Physician Practice**

1. Although about three quarters of physicians agree that they should provide nutrition counseling, a recent survey has shown that only about 15-30% of physicians report providing nutrition counseling and only 14% of men and 22% of women reported receiving nutrition advice from their physicians (27). Barriers cited to providing nutrition counseling include lack of time, lack of patient compliance, lack of materials, and lack of training in nutrition counseling. Research has also shown that providers can play a key role in identifying patients who are overweight or at risk for obesity and provide brief counseling interventions with additional support from dietitians and other professional support staff (27).

#### **b.) Types of Diet**

1. A recent comprehensive evidence-based review of popular diets used the National Heart Blood and Lung Institute grading system to rank popular diets. It included reviews of popular diets such as the Atkins Diet and Sugar Busters! The diets reviewed were characterized as follows (26):
  - High-fat, low CHO: 55-65(% kcals) fat, < 20% CHO, 25-30% Protein
  - Moderate-fat, balanced nutrient reduction: 20-20% fat, 55-60% CHO, 15-20% protein
  - Low-and very-low fat: <10-19% fat, >65% CHO, 10-20% protein

Major findings included the following (refer to supplement for details):

- Diets that reduce caloric intake result in weight loss. However some diets may result in nutrient deficiencies and may increase the risk of heart disease.
- An optimal weight loss diet is one that maximizes loss of body fat and minimizes loss of lean body mass.
- A moderate fat, balanced nutrient diet is optimal for ensuring adequate nutritional intake.
- Very low fat diets are low in vitamins E, B<sub>12</sub>, and zinc.
- Long-term compliance is likely a function psychological issues rather than macronutrient composition.

## **Recommendations:**

### **a.) Physician Practice**

1. Clinicians can utilize a variety of dietary assessment tools to assess dietary intake and behaviors and these tools can guide provider counseling. The utility of such assessment tools still needs further evaluation for different ethnic groups (25).
2. Clinicians must also keep in mind that long-term compliance is likely a function of psychological issues rather than macronutrient composition (26).

### **b.) Types of Diet**

1. In general, a diet that contains approximately 1400-1500 kcal/day, regardless of macronutrient composition, has been found to result in weight loss. Caloric intake should be reduced by 500 to 1,000 calories per day from the current level. Men and women have different cut off points for energy needs and more specific dietetic evaluation is required for specific weight loss caloric requirements. A moderate fat, balanced nutrient diet is optimal for ensuring adequate nutritional intake. Some diets like the high fat, low carbohydrate diets, and the very low fat diets may result in nutrient deficiency (26).
2. Low-energy density diets can encourage long-term weight loss maintenance because a wide variety of foods can be included in the diet, permitting satisfying portions of food. Reducing energy intake is an important element in a weight-loss program. Reducing fat content and increasing physical activity without restricting energy intake is a relatively inefficient method of weight loss (29).

## **Behaviors**

### **Summary of Findings**

1. Successful weight control depends largely on individual behavior change related to dietary and exercise practices. The ability to identify individuals who have the greatest potential for successful modification of these behaviors would be very useful for practitioners involved in planning weight control interventions (31).
2. The prevalence of obesity in primary care practices is higher than rates reflected in population based surveys. Primary care practices may have higher rates because overweight individuals may be more likely to visit their physician more frequently due to other health problems such as heart disease, diabetes, and hypertension (43). Unfortunately, it has been found that even though obese individuals visit their physician more often, they receive less preventive care services such as pelvic and breast exams (34).
3. The Transtheoretical Model ("Readiness to Change") suggests that there are five distinct stages an individual passes through when adopting intentional behavior change. These range from the **Pre-contemplation** stage when there is no conscious desire to change, to the **Contemplative** stage when there is a recognized desire to change, and the **Preparation** stage where there is a desire to take action

within a short time frame, usually 30 days. The remaining stages are the **Action** stage, when behavior change is ongoing and the **Maintenance** stage to prevent relapse. The ability to determine where an individual is on the “Readiness to Change” continuum may allow for more efficient resource deployment and appropriate selection of cognitive-behavior interventions, thereby maximizing the potential for long term success (31).

4. In one study that assessed a group of largely overweight/obese family practice patients, it was determined that for 6 identified target behaviors related to weight management, 50% of the patients were found to be in the Preparation stage (Logue, E. et al). However, it was not uncommon for an individual to be in the Preparation stage for one target behavior and not in others. Conducting interventions for target behaviors that are in the Preparation stage would seem likely to result in better outcomes than it would be for those behaviors that are in the Pre-contemplation or Contemplation stage. However, another study (Steptoe et al) involving nurse-delivered counseling to overweight and sedentary adults found that while readiness to change predicted increased activity at 4 months the correlation did not hold up at 12 months. They concluded that different factors are related to short and long term modifications in behavior, illustrating again the importance of matching the intervention to the level of readiness or motivation to change (33).
5. A retrospective clinical study done at Kaiser Permanente in San Diego conducted on 190 persons who each lost more than 100 pounds, demonstrated that at least half of the participants were able to keep more than 50% of their weight loss at 18 months on a very-low-calorie diet (30). However success declined at 30-month follow-up. The real significance of this study was the data that related psychological and family history to success at weight loss. Sixty-six percent of participants had a history of depression, as defined by DSM III criteria. Criteria associated with failure to maintain weight loss was associated with: history of incest ( $p < .01$ ), history of other sexual abuse ( $p < .01$ ), women with a family history of eating disorders ( $p < .03$ ), and women with alcoholic spouses ( $p < .04$ ).

## **Recommendations**

1. Providers should be aware of which stage on the “Readiness to Change” scale their patients are at with respect to weight management counseling.
2. Providers can utilize the “Readiness to Change” paradigm in their practice.
3. It is important for clinicians to recognize that there may be underlying psychological and familial contributing factors to obesity. Assessments should include questions about family dynamics and histories of abuse, alcohol, and substance abuse.

## **Weight Management**

### **Summary of Findings**

#### **a.) Physician Practice**

1. Physicians may lack adequate education and training to treat obesity and obese patients' preventive health care needs. As a result, opportunities to counsel individuals with obesity during routine visits may be missed. Ensuring that obese individuals receive appropriate preventive care can have substantial health benefits by reducing morbidity and associated health care costs (34).
2. One study looking at weight loss counseling by health care providers indicated that overall about 71% of overweight adults were not counseled to lose weight and among those with cardiac disease only 50% received counseling (41). Although physicians were more likely to counsel their overweight patients who were older or who had co-morbidities, they were not more likely to counsel those overweight patients who reported smoking or sedentary lifestyles.
3. Other research supports the fact that counseling advice from a medical professional can be a strong motivating factor for increasing readiness to change behavior (44).
4. Findings suggest that more provider training and counseling on weight loss is indicated(41). Physicians should be more involved in the treatment of obesity by routinely recording BMI, weight, and waist circumference. Counseling should be provided to discuss nutrition, physical activity, and other lifestyle factors that are related to obesity (47)

#### **b.) Weight Management Programs**

1. School administrators and nurses feel schools should offer weight management services. However, the administrators and nurses lack the time, training, and educational materials to properly address this issue (49).
2. A study comparing a leg to leg bioelectrical impedance analysis (BIA) system to underwater weighing found that BIA provides quick, valid, and accurate body composition measurements for overweight and obese premenopausal women (46). This may be a tool to be used more widely in weight management programs.
3. Of the three weight management/weight loss programs reviewed, SHAPEDOWN, the Trevoze Behavior Modification program (TBM), and the Eat for L.I.F.E. program, the TBM program showed an average weight loss(17.3%) for those who were in program for five years. This program showed how a low cost, lay administered program could produce long-term weight loss (35, 39, and 51).
4. One study which presents a historical perspective on weight loss paradigms questions current weight loss strategies. It points out that calorie restricted dieting seems inadvisable because it produces negative effects on resting metabolic rate and that low fat and calorie restricted diets tend to promote feelings of nutritional inadequacy which may lead to yo-yo dieting (38).

5. The American Heart Association's Guidelines for Weight Management Programs for Healthy Adults, released in 1994 includes guidelines for patient records, program staffing, and guidelines for physician referral, identification of reasonable weight loss goals, and other elements of effective programs, including long-term maintenance (42).
6. A community weight management program should address both physical activity and nutrition. Working with children and adolescents to instill good habits may prevent them from becoming overweight as adults (36).

**c.) Patient Issues:**

1. One study found that only 42% of patients who were overweight were advised to lose weight by their health care professionals (37).
2. The types of weight management assistance patients want from their physicians are dietary advice, help in setting realistic weight goals, and exercise recommendations (45).
3. Approximately one third of patients falling in the normal or underweight category ( $< 25 \text{ kg/m}^2$ ) believed they needed to lose weight (45).
4. Many patients are willing to discuss their weight with their current physician and would like a comprehensive approach (45).
5. A weight loss program for women should be multidimensional and a weight management paradigm consisting of the following five points is recommended: formulation of a reasonable weight, prevention of unnecessary weight gain or loss, weight loss when necessary, prevention of relapse, and acceptance of overweight/obese physique. Intrapersonal characteristics must also be considered (48).

**Recommendations:**

1. It is advisable that providers counsel their patients on the importance of healthy eating and physical activity in order to maintain a healthy weight.
2. Emphasis should be placed on lifestyle management, not very low calorie diets and pills. The combination of media promoting a culture of thinness and deprivation-based programs may help contribute to feelings of guilt, low self-esteem, and disordered eating.
3. Additional physician training and resources are needed in this area. A team consisting of a primary care physician and dietitian should be working with the patient and this team can be expanded to include a psychologist and/or exercise physiologist (28). It is important that treatment is individually tailored, adjusted periodically, and lifelong.

4. Further research examining reimbursement mechanisms and cost effectiveness for weight management programs is needed.
5. Weight loss programs should include the following:
  - Patient informed consent
  - Screening: measure height, weight, BMI, and waist circumference (there are still some uncertainties as to the frequency of measurement)
  - Assess co-morbidities
  - Adequate staffing and support staff such as dietitians, health educators, physical activity specialists, and others
  - Recommend using NHBLI "Identification, Evaluation, and Treatment of Overweight and Obesity in Adults" as treatment guidelines:  
[http://www.nhlbi.nih.gov/guidelines/obesity/ob\\_home](http://www.nhlbi.nih.gov/guidelines/obesity/ob_home).
  - Recommend using the Maternal & Child Health Bureau and Department of Health & Human Services "Obesity Evaluation and Treatment: Expert Committee Recommendations" as pediatric guidelines.
6. Pharmacotherapy should be considered for patients who are considered high risk (BMI  $\geq 30$  kg/m<sup>2</sup> or  $\geq 27$  kg/m<sup>2</sup> with comorbidities). It is beyond the scope of this section to deal with specific indications for drug therapy.
7. Surgical options should be considered for patients with extremely high risks (BMI  $\geq 40$  kg/m<sup>2</sup> or 35 kg/m<sup>2</sup> with co-morbidities). It is beyond the scope of this section in the literature to deal with specific indications for surgery.
8. Providers need to be cognizant of the fact that short term weight loss strategies are not enough. Attention must be paid to long term maintenance.
9. A school-based weight management program may be an alternative when addressing overweight children and adolescents.
10. Progress has been made in defining both adult and pediatric overweight and obesity in addition to developing treatment algorithms. However, many weight management protocols are weak in the assessment and treatment of behavioral and psychodynamic contributing factors to overweight and obesity. Optimum weight management strategies are difficult to implement given the fact that we know overly restrictive dieting and obsession with exercising may contribute to disordered eating, guilt, and low self-esteem. Weight management programs need to be cognizant of these facts and promote positive self-esteem with emphasis on healthy eating and physical activity. Additional research is necessary to understand why certain racial groups are at increased risk for obesity and how weight management programs can be effective in different cultural settings. Evidence-based guidelines for the prevention and treatment of obesity need to be expanded and instituted.

### **Pediatrics**

This section is limited in scope. Please use the web site URL listed below to retrieve a PDF document of the comprehensive UC Berkeley Pediatric Literature Review for your reference files.

**[http://www.cnr.berkeley.edu/cwh/PDFs/Full\\_COPI\\_secure.pdf](http://www.cnr.berkeley.edu/cwh/PDFs/Full_COPI_secure.pdf)**

## **Summary of Findings**

1. The Maternal and Child Health Bureau, Department of Health and Human Services (DHHS), and the Health Resources and Services Administration (HRSA) have developed a set of expert recommendations for the evaluation and treatment of obesity in pediatrics. An expert panel reviewed the literature and developed evidence-based guidelines for the evaluation and treatment of children and adolescents who are at risk for becoming overweight or who are already overweight (52).
2. Parental neglect during childhood predicts an increased risk of obesity in young adulthood. This risk factor has been found to be stronger than other psychosocial factors such as parent education or occupation. One longitudinal study in Copenhagen followed children 9-10-years old over a 10-year period and found that parental neglect was most associated with the risk of becoming obese in young adulthood. Insignificant risk factors included overprotective parental support, family structure, and parent education or occupation (53).
3. A cross sectional survey was conducted with a sample of 191 children aged 10-years old (46% African American and 65% female), to evaluate third party payer insurance reimbursement for children enrolled in a Children's Weight Management Program (WMP). Five types of insurance were categorized and evaluated ranging from Indemnity insurance to Medicaid to medical assistance fee for services. Results showed that a median reimbursement of 11% (ranges from 0-100%). Rates differed greatly with policy types. Rates did not differ based neither on the demographic factors nor with degree of obesity (54) The authors conclude that "Despite the need for weight management services for obese children, these low reimbursement rates preclude the long-term financial viability of such programs without external support or a significant proportions of patients who can pay "out-of-pocket".

## **Recommendations**

1. Providers are recommended to use the "Obesity Evaluation and Treatment: Expert Committee Recommendations" as a reference for their pediatric patients. These recommendations are not for children under 2 years of age. They are thorough and would be a good tool to have in pediatric health care settings (perhaps in a revised form) to help physicians and other health care personnel in the evaluation and treatment of obese youth.
2. Weight management programs for children are needed. However, unless insurance company reimbursement policies expand for the treatment of children who are at risk for overweight or overweight, health care providers will be limited as to the services they can offer.
3. Providers need to be aware that there may psychosocial and familial contributing factors with overweight children. A comprehensive psychosocial and family history is important.



## **Economic Burden**

In a not yet published study performed for the California Department of Health Services, the estimated financial costs attributed to physical inactivity and obesity total nearly \$25 billion. These costs are attributed to medical care (\$13.3 billion), lost employee productivity (\$11.0 billion), and worker's compensation (\$0.3 billion) costs. By the year 2005, these costs are estimated to increase by 32% due to California's aging population, growth in the general population, increased prevalence of physical inactivity and obesity, and inflation.

## **Summary of Findings**

1. The excess costs in the U.S. to both the health care system and business are staggering. Estimates for 1995 indicate that approximately \$99.2 billion were spent on both direct and indirect health care costs associated with obesity, this equates to approximately 5.7% of U.S. health expenditures. Given the fact that obesity rates are continuing to rise, 2002 costs must be substantially higher (58).
2. One study estimates the cost of obesity to U.S. business in 1984 at \$12.7 billion. Given the increased prevalence of obesity and inflation, current costs could be assumed to be substantially higher. About 43% or \$10.1 billion were for health insurance expenditures to address hypertension, diabetes, hypercholesterolemia, stroke, and other chronic diseases associated with obesity. In 2002, the cost of obesity is expected to be much higher due to the increase prevalence of obesity and inflation (56).
3. A recent CDC study of youth ages 6- to 17-years alarmingly showed that the proportion of pediatric discharges associated with obesity has dramatically increased over the past 20 years. Obesity-associated annual costs (based on the 2001 U.S. dollar) increased more than three-fold; from \$35 million during 1979-1981 to \$127 million during 1997-1999. The discharges for diabetes nearly doubled, obesity, and gallbladder diseases tripled, and sleep apnea increased five-fold (57).
4. A 1993 health survey of a large HMO in northern California revealed a positive association between BMI and annual rates of inpatient days, number and costs of outpatient visits, costs of outpatient pharmacy, laboratory services, and total costs. The main contributors to costs associated with elevated BMI were coronary artery disease, hypertension, and diabetes (55).

## **Recommendations**

1. From an economic standpoint additional focus and resources must be directed to prevent the increasing prevalence of overweight and obesity in America today. It is critical that attention be paid to obesity prevention in youth.
2. There is also a need for additional research in identifying direct and indirect health care costs, and for evaluating how these costs impact different racial, SES, and age groups. Furthermore there is a need to look at the effectiveness of obesity prevention programs are in reducing health care costs, both at the worksite and in the community.

**California Obesity Prevention Initiative  
Health Systems Work Groups  
INTERVENTION STUDIES**

**PHYSICAL ACTIVITY**

<b>Article (1)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>Incorporating Physical Activity Advice in Primary Care: Physician-Delivered Advice Within the Activity Counseling Trial</p> <p>Albright, AL et al.</p> <p>Am J Prev Med (2000) 18;225-234</p>	<p>Sample: 62 physicians from 11 medical practices (4 in SF Bay Area, 2 in Dallas, 5 in Memphis) volunteered to participate in study.</p> <p>Represented diverse primary care settings: community clinics, group practices, and HMO or managed internal medicine and care family practice clinics.</p> <p>Physicians received 1 hr training, agreed to remain blind to patients' assigned condition, agreed to advise all patients to begin a physical activity program and provide follow-up at non-acute visits, and permitted study paperwork to be in patients' charts.</p>	<p>Physician reviewed patients current activities and helped guide patient in setting long-term physical activity goal; referred patient to health educator for information and counseling.</p> <p>Survey mailed to physician after all of their patients had been randomized into study.</p>	<p>48 (89%) of physicians completed mailed survey.</p> <p>46% spent the recommended 3-4 mins delivering physical activity advice.</p> <p>88% reported that participation in the study had not been a burden to them or their clinics.</p> <p>63% stated the advice protocol had no effect on the overall length of office visit.</p> <p>64% stated advice protocol improved their ability to advise patients on physical activity.</p> <p>75% reported they often or always gave advice to sedentary patients who were not enrolled in the study.</p>	<p>Physicians reported positive perceptions of the study and advice protocol.</p> <p>Because they volunteered for the study, these physicians may have been more motivated to offer advice on physical activity than other primary care physicians.</p> <p>Although physicians are being asked to do more in less time, the results indicate that many physicians can and will modify their practice to address a lifestyle factor efficiently and consistently.</p>

## Physical Activity

Article (2)	Study Design	Intervention	Outcomes	Comments
<p>Stages of Change for Physical Activity, Diet &amp; Smoking among HMO Members with Chronic Conditions</p> <p>Boyle, R et Al.</p> <p>Am J Health Prom 1998; 12(3): 170-175</p>	<p>Sample: N=6152</p> <p>HMO members age 40 or over with oversampling of members with HTN, DM, dyslipidemia or heart disease.</p> <p>Almost all white, married at some point, and well educated with fairly good health habits.</p> <p>Stratified cross sectional survey.</p> <p>60 question survey was mailed to members with phone follow up of non-responders to determine correlates of readiness for change in health habits.</p> <p>82% response rate.</p>	<p>Survey evaluated demographics; health advice from a professional in the past year; Readiness to change for physical activity, fat intake, fruits, and vegetable intake and smoking.</p> <p>The data was analyzed by demographics, number of chronic health problems, type of chronic health problem, and advice received.</p>	<p>Readiness for change was highest among members with more chronic health problems.</p> <p>Readiness for change was lowest among diabetic members</p>	<ol style="list-style-type: none"> <li>1. Atypical group, not applicable to most populations.</li> <li>2. The authors conclude that members at highest risk have the greatest readiness to change. Hard to know exactly what that means. (Are they just more desperate to change?)</li> <li>3. Authors also conclude that targeted stage-specific efforts to support behavior change are likely to be acceptable and effective. No evidence to support those conclusions in this study.</li> <li>4. Lots of subgroup analyses to correlate readiness for different health habits; unable to evaluate the validity of these.</li> </ol>

## Physical Activity

Article (3)	Study Design	Intervention	Outcomes	Comments
<p>Advice on exercise from a family physician can help sedentary patients to become active.</p> <p>Bull F, Jamrozik, K</p> <p>Am J Prev Med 1998; 15 (2): 85-94</p>	<p>Sample: N=763 patients from a sample of 6351 given a screening questionnaire about activity level.</p> <p>Done in Australia</p> <p>Demographics, smoking, and BMI were similar but not identical between control and intervention groups.</p> <p>Control group drank more alcohol.</p> <p>Demographics for 416 patients in Intervention group:</p> <p>Male: 33%</p> <p>1-39 yr. 30%</p> <p>40-59 yr. 33%</p> <p>over 60 yr. 38%</p> <p>Female 67%</p> <p>1-39 yr. 38%</p> <p>40-59 yr. 35%</p> <p>over 60 yr. 28%</p> <p>A controlled trial to determine if brief counseling by a primary provider followed by a standard or customized written education was effective in increasing physical activity in sedentary patients.</p> <p>Definition of "now active" was one episode of physical activity in the prior 2 weeks.</p> <p>Two analyses were done:</p> <p>Only valid responses counted</p> <p>Versus</p> <p>Non-responders counted as still sedentary.</p>	<p>Sedentary patients consulting with their family physician for any reason were allocated to 1 of 3 groups depending on the day of the week.</p> <p>The control group received no extra counseling.</p> <p>Patients in the two interventions groups received 2-3 minutes of verbal counseling about exercise from their doctor. They were then asked to fill out a specific exercise questionnaire.</p> <p>A few days later one intervention group received a standard pamphlet in the mail promoting increased physical activity.</p> <p>The other group received a pamphlet that was customized based on their responses to the exercise questionnaire</p>	<p>Response to survey after 1 month 70%</p> <p>After 6 months 60%</p> <p>At 12 months 58% of the 658 remaining subjects.</p> <p>Including non responders as sedentary:</p> <p>Now active:</p> <p>1 month</p> <p>Control gp 31%</p> <p>Intervention gp 40%</p> <p>6 months</p> <p>Control gp 30%</p> <p>Intervention gp 38%</p> <p>12 months</p> <p>Control gp 31%</p> <p>Intervention gp 36%</p> <p>Initially the intervention gp showed increased frequency and duration of physical activity but by 1 year results were similar.</p>	<p>The authors consider the results to show that a simple intervention aimed at the promotion of physical activity to sedentary patients to be successful because there were statistically significant differences at 1 and 6 months.</p> <p>Given that it's a brief inexpensive intervention the risk benefit ratio probably favors counseling; for a practitioner, it is rather discouraging how little evidence there is that we influence patient health behaviors.</p>

**REVIEW ARTICLE**  
**Physical Activity**

Article (4)	Study Design	Recommendations	Conclusions/Comments
<p>Review of Primary Care-Based Physical Activity Intervention Studies</p> <p>Eakin, G.E. et al</p> <p>J. Family Practice (2000) 49(2);158-168</p>	<p>Review Article. Utilized RE-AIM framework. Searched MEDLINE (1980-1998), psychosocial abstracts, ERIC and HealthStar databases, JFP web site, and bibliographies of selected studies.</p> <p>Inclusion Criteria: randomized controlled trials or quasi-experimental studies using a comparison group, intervention delivered or initiated in a primary care setting, &amp; at least one reported result on physical activity.</p> <p>15 articles included in review</p>	<p>Primary care-based physical activity counseling is moderately effective in producing short-term improvements. Studies including interventions tailored to participant characteristics and which offered written materials produced stronger results.</p> <p>Short-term improvements were observed across all types of interventionists, including physicians, nurses, and combinations of physicians and health educators.</p> <p>Brief counseling may be as effective as more lengthy counseling. Results with adults 50 years and older did not demonstrate significant short-term improvements.</p>	<p>Primary care-based physical activity interventions are an effective means of reaching a large segment of sedentary adults.</p> <p>Although brief, primary care-based interventions appear efficacious in producing short-term results in physical activity, maintenance remains difficult.</p> <p>Men, smokers, and older adults appear less likely to participate in physical activity interventions.</p> <p>More research is needed on interventions and clinic characteristics associated with physical activity.</p>

**REVIEW ARTICLE**  
**Physical Activity**

Article (5)	Study Design	Recommendations	Conclusions/Comments
<p>A systematic review of physical activity promotion in primary care office settings</p> <p>Eaton, CB, Menard, LM</p> <p>Br. J. Sports Medicine (1998) 32; 11-16</p>	<p>Review Article</p> <p>Computerized searches of MEDLINE, Dialog (R) of Dissertation Abstracts, Sci Li Reference from 1961-1997. Selected articles from bibliographies of selected articles. Plus submission of articles from experts in the field. Inclusion criteria: control group, only interventions that took place in doctor's practice, exercise had to be assessed for a minimum of 4 weeks. Articles reviewed by two independent reviewers.</p> <p>20 relevant articles from the U.S. and Commonwealth reviewed.</p>	<p>For those providers who believe in the "exercise hypothesis", recommend five minute personalized activity message, followed by a written prescription for physical activity, such as briskly walking for 30 minutes a day, and an activity log, for those patients at risk for medical complications of inactivity and ready to change.</p>	<p>Limited evidence that office-based physical activity promotion in primary care setting is efficacious in promoting changes in physical activity. Long-term efficacy may require more active follow-up programs, such as reminder phone calls, increase social support, and other incentives.</p> <p>Although this article was in the Br. J. Sports Medicine, it was supported in part by a grant from the American Academy of Family Physicians.</p>

## Physical Activity

Article (6)	Study Design	Intervention	Outcomes	Comments
<p>Changing physician practice of physical activity counseling.</p> <p>Eckstrom, E et al</p> <p>J Gen Intern Med 1999;14: 376-378</p>	<p>Sample:</p> <ol style="list-style-type: none"> <li>48 internal medicine residents who practice at a VA Hospital.</li> <li>Ten patients for each of the residents. N= 465</li> </ol> <p>Patient demographics not specific except they are referred to as “an elderly population with multiple chronic diseases”. We can probably assume most were male.</p> <p>Prospective controlled trial to evaluate the efficacy of education for resident physicians to improve their self-efficacy in physical activity counseling.</p>	<p>2 educational workshops for 21 of 48 resident physicians to improve their efficacy in physical activity counseling.</p> <p>There was didactic and practical education based on stages of change theory and learning &amp; practicing counseling skills for patients with chronic diseases.</p> <p>The 27 control residents got no extra education. The residents completed surveys before the workshops and 3 months later.</p> <p>Patients were surveyed about physical activity and their perceptions of MD counseling before the intervention and were surveyed 6 months later.</p>	<p>Statistically insignificant improvements in resident (self rated) self-efficacy in these counseling skills.</p> <p>No real change in patient behavior or their perception of physician counseling.</p>	<ol style="list-style-type: none"> <li>Sad commentary on implementation of a theory that holds great promise.</li> <li>Unable to determine if the educational intervention was inadequate or if the time to evaluate effective counseling by the residents was too short. (Behavior change occurs gradually over many months and repeated counseling is usually necessary).</li> </ol>

## Physical Activity

Article (7)	Study Design	Intervention	Outcomes	Comments
<p>The Newcastle exercise project: a randomized controlled trial of methods to promote physical activity in primary care.</p> <p>Harland, J., et al</p> <p>BMJ, vol. 319, 25 Sept. 1999.</p>	<p>Sample: 523 adults aged 40-64 years recruited from a general practice in economically disadvantaged urban area in Newcastle, U.K. Racial and ethnic make-up of participants was not described.</p> <p>Patients who were unable to complete a submaximal exercise test (patients with cardiovascular and/or respiratory disease causing raised risk) and patients who already participated in vigorous exercise at least 3 times per week over the previous 6 months were excluded.</p> <p>Participants were randomly assigned to one of 4 study groups or to the control group.</p> <p>Physical activity was scored as follows:  Level 0 – no sessions moderate or vigorous  Level 1 – 1-4 sessions moderate or vigorous  Level 2 – 5-11 sessions moderate or vigorous  Level 3 - <math>\geq</math> 12 sessions moderate  Level 4 - <math>&gt;</math> 12 sessions moderate or vigorous  Level 5 - <math>&gt;</math>12 sessions vigorous</p> <p>All measured over the previous 4 weeks</p>	<p>Brief (one interview) or intensive (six interviews over 12 weeks) motivational interviewing based on the stages of change model of behavior change, with or without financial incentives (30 vouchers entitling free access to leisure facilities). Participants were 41% male, 76% married or cohabiting, occupational class included 27% non-manual labor and 72% manual labor with current employment status of 52% full or part time employed, 10% seeking work, 13% unable to work due to illness, 14% retired, and 10% looking after family and home or other. 59% lived in owner occupied house, 35% rented from city council, 2% rented privately, and 4% other. 63% of participants owned a car and 94% had a telephone.</p>	<p>Response rate was 81% at 12 weeks and 85% at 1 year. More participants in the intervention group reported increased physical activity scores at 12 weeks than controls (38% vs. 16%, difference 22%, 95% confidence interval for difference 13% to 32%), with a 55% increase observed in those offered six interviews plus vouchers. Vigorous activity increased in 29% of intervention participants and 11% of controls (difference 18%, 10% to 26%), but differences between the intervention groups were not significant.</p> <p>Short term increases in physical activity were not maintained at one year follow-up and even the most intensive intervention (six motivational interviews and vouchers) was ineffective in promoting long term adherence to increased physical activity.</p>	<p>Brief interventions promoting physical activity have not generally been rigorously evaluated and are questionable in effectiveness.</p> <p>National, state, and local governments and other purchasers of healthcare, as well as health care providers should be cautious about current and future expenditure on, and implementation of, exercise prescription or referral strategies.</p> <p>There is a need to base policy on evidence.</p>



## Physical Activity

Article (8)	Study Design	Intervention	Outcomes	Comments
<p>Physician recommendations for diet and physical activity: which patients get advised to change?</p> <p>Kreuter, M., et al</p> <p>Preventive Medicine, Volume 26, 1997 Pp 825-833</p>	<p>Sample: 882 self-selecting adult patients and 27 physicians from four community-based medicine clinics located in three towns in southeastern Missouri over a two-week period. Clinics were selected based on comparatively high patient volume for the region.</p> <p>Southeastern Missouri has the highest rates of excess mortality from chronic disease in the state. Rates of poverty and unemployment in the region are also higher than state averages.</p> <p>Most patients were female (74%), white (96%), and married (74%). Nearly one in four (22%) had less than 12 years of education. Mean age was 49 years and 39% resided at a rural route address.</p>	<p>Questionnaire.</p> <p>Eligible patients were invited to complete a questionnaire while in the waiting area of their doctor's office. In addition to questions about physician advising, the questionnaire included multi-item assessments of physical activity and dietary fat consumption. For each behavior, the questionnaire assessed the patient's level of risk, readiness to make risk-reducing changes, and psychosocial factors such as perceived benefits and barriers, self-efficacy, and goal setting. Additional demographic data were collected.</p> <p>After patient data had been gathered, each of 27 physicians was mailed a randomly selected list of 10 or fewer of his or her regular patients who had participated in the study. For each patient, physicians were asked if they had told the patient to eat less fat or increase physical activity in the past 12 months.</p>	<p>63% of physicians responded to the mailed questionnaire. According to the physicians, they advised 60% of a random sample of their patients to eat less fat and 62% to increase physical activity.</p> <p>Of the 882 patients, 77% reported having seen their physician in the past 6 months. Among these, 33% reported having been advised to eat less fat and 31% to increase physical activity. Levels of agreement were low: 61% for eating less fat and 58% for increasing physical activity. The vast majority of non-agreeing cases (88%) involved physicians reporting they advised patients and patients reporting they were not advised.</p> <p>Patients health-related behaviors were not associated with receiving physician advice. Patients with diabetes, high blood pressure, high cholesterol levels, and a high BMI were much more likely to report having received physician advice to increase physical activity and to reduce dietary fat than were patients without these conditions.</p>	<p>Physicians were more likely to provide advice to patients whose health was already compromised than to those who engage in unhealthy behaviors, but as of yet are disease free. Additionally, physician decisions to advise patients may be guided by quick, but fallible heuristics, rather than a more thorough behavioral assessment.</p> <p>This study reported only on the perceptions of patients and their physicians related to the preventive advice provided by physicians at office visits. It did not consider whether the advice provided by physicians makes a positive difference in healthy behaviors.</p>

## Physical Activity

Article (9)	Study Design	Intervention	Outcomes	Comments
<p>Increasing population levels of physical activity through primary care: GP's knowledge, attitudes and self-reported practice</p> <p>Lawlor, D et al</p> <p>Family Practice, Vol. 16, No 3 pp. 250-254</p>	<p>Sample:174 general practitioner responders (from 68 practices), giving a response of 74% (72% of practices) in the Bradford district in the UK.</p> <p>Survey</p>	<p>GP's (general practitioner's) attitudes and self-reported practice were assessed by a number of statements using a four-point Likert-type scale. The scores had no neutral points, forcing a choice for each statement. Knowledge was assessed by asking responders whether evidence of benefit, from regular physical activity, existed for each of a list of conditions; for this question a "don't know" option was available.</p> <p>Data from returned questionnaires was entered into a database and analyzed using EPI-INFO. For a subset of questions, answers from responders with similar characteristics to non-responders were compared with those of other responders. Chi-square goodness-of-fit, on two-by-two contingency tables with Yates correction, was used for all tests for significance.</p>	<p>The study indicates that the GPs in the UK have good levels of knowledge of both the health benefits of regular activity and the levels of activity needed to acquire those benefits. This study also suggested that the GPs believe advice to increase physical activity is most effective when linked to a presenting complaint.</p> <p>Time and lack of relevance to the consultation and concerns that patients were unlikely to follow advice were identified as the most important barriers to promoting activity.</p>	<p>There is little evidence on effective ways to increase regular physical activity levels in healthy individuals – prevention, as opposed to already ill individuals – treatment.</p>

**REVIEW ARTICLE**  
**Physical Activity**

Article (10)	Study Design	Recommendations	Conclusions/Comments
<p>Obesity-what are the current treatment options?</p> <p>Lean, MEJ</p> <p><i>Exp Clin Endocrinol Diabetes</i> (1998) 106:22-26.</p>	<p>Commentary</p> <p>This article comes from the Dept. of Human Nutrition, Glasgow Univ., Scotland, UK. The author discusses criteria for successful weight management with a focus on the prevention of Non-insulin dependent diabetes (NIDDM), now referred to as type 2 diabetes.</p>	<p><u>Newly diagnosed NIDDM patients:</u> should focus on weight loss, i.e. low calorie diet, and weight maintenance programs (e.g. exercise, drugs, etc). Using conventional diets 5-10% weight loss within 3 months in most patients is achievable.</p> <p><u>Establish overweight NIDDM:</u> Once wt. loss is achieved in the first 3-6 months, on-going wt. management is recommended to prevent wt. gain.</p> <p>Anorectic drugs effective over 1-2 years maintaining weight loss of 5-10% for 70% of patients, 20-30% of patients cannot tolerate anorectic drugs, and 50% of patients maintain weight loss via intensive long term wt. maintenance program.</p> <p>Surgery was highly effective in maintaining weight loss in 90% of cases, however reserved for a smaller group of patients.</p>	<p>Well written commentary. Refer to article for further details.</p> <p>Although there is a list of references it is not always clear where the author is getting his information.</p> <p>Also includes tables of projected weight loss trajectories for adults following weight loss and a useful bar graph summarizing various weight loss strategies, with mean bodyweight loss, in a NIDDM meta-analysis.</p>

## Physical Activity

Article (11)	Study Design	Intervention	Outcomes	Comments
<p>The Effect of Physician Advice on Exercise Behavior</p> <p>Lewis, BS et al</p> <p>Preventive Medicine 22(1993) 110-121</p>	<p>Sample: N = 396 (43 were lost to follow up)</p> <p>Convenience sample of adults having an ambulatory appointment at the Dept. of Family Practice at a university clinic staffed by residents.</p> <p>No pregnant women or patients having a procedure were used in the study.</p> <p>Ethnicity: Unknown</p> <p>Socioeconomic level: 89% completed high school 55% were employed 42% had private insurance</p> <p>32% had Medicaid 26% had no insurance</p> <p>Before–after design with a control group.</p> <p>All participants received the pretest version of the Exercise Habit and Attitude Survey (EHAS). Post intervention all participants received the post –test version of EHAS via telephone survey.</p> <p>Participants were mailed a telephone appointment card with \$1 as an incentive.</p>	<p>Intervention consisted of standardized physician exercise advice .</p> <p>Protocol: ASK about exercise ASSESS the response ADVISE accordingly</p> <p>12 physicians were trained one on one to use the protocol. They received the protocol on a gold card. The experimental group was identified to the residents by a gold card in their medical record. The residents had the choice not to give the advice if it was inappropriate or if they were too busy.</p>	<p>A substantial portion of all physicians gave exercise advice. During the intervention phase (phase II) among both the experimental and the control groups, the frequency of unprompted advice increased.</p> <p>The experimental group increased exercise advice by 60%.</p> <p>The experimental group increased the minutes of exercise per session and the minutes of exercise per week but not the number of times patients exercised per week.</p>	<p>The unprompted exercise advice was a problem in the outcome analysis in that they had 3 groups (experimental, control, and unprompted advice group). The results showed that advice increased the minutes in exercising but could not show that the prompted advice was the best intervention.</p>

## Physical Activity

Article (12)	Study Design	Intervention	Outcomes	Comments
<p>The Feasibility of Behavioral Risk Reduction in Primary Medical Care</p> <p>Logsdon, DN et al</p> <p>Am J Prev Med 1989;5(5) 249 - 256</p>	<p>Sample: N = 2218 adults 1409 study subjects 809 control</p> <p>“quasiexperimental design” Cohort Study</p> <p>The study was done at medical group sites around the country. These sites were teamed with reference sites (medical groups).</p> <p>The study group was divided into 2 parts (treated study group and an untreated study group). The control group was at the reference sites.</p>	<p>All participants were mailed a behavioral risk questionnaire. The treated study group received a free preventive care visit with their primary care physician. All participants were sent the same questionnaire 12 months later.</p> <p>A model of medical services, age specific was developed and made into protocols. Implementation of the protocols for preventive medical services included a CME module with training for physicians in patient communication skills and the epidemiologic evidence for disease prevention. Training was only provided to physicians in the study group not the control group.</p>	<p>After controlling for sociodemographic cofounders, the treated study group with behavioral risks more frequently reported positive changes than the controls in five of the six risk behaviors. These behaviors were:</p> <ol style="list-style-type: none"> <li>(1) starting regular physical exercise</li> <li>(2) beginning to use seat belts</li> <li>(3) losing 5 or more pounds</li> <li>(4) reducing alcoholic beverage intake</li> <li>(5) performing monthly BSE</li> </ol>	<p>The study was completed in 1984. Changes in primary care regarding patient education in relation to risk factors and prevention may have made the study results outdated.</p> <p>The questionnaire name was never given or any comments regarding its reliability or validity.</p>

## Physical Activity

Article (13)	Study Design	Intervention	Outcomes	Comments
<p>Training Physicians to Conduct Physical Activity Counseling</p> <p>Marcus, BH et al</p> <p>Preventive Medicine (1997) 26;382-388</p>	<p>Sample: # of physician participants: 4</p> <p># of patient participants: 63</p> <p># of patients who completed study: 44</p> <p>Avg. age of pt: 67.1 years</p> <p>Sequential comparison group design</p> <p>Examine change in self-reported physical activity between experimental and control groups.</p>	<p>Included four major components: (1) physician training in an office-based counseling intervention, (2) individualized patient counseling and educational/behavior change materials based on the stages of change model and social cognitive theory, (3) physician office support system, and (4) monitoring/follow-up.</p>	<p>Training physicians to conduct activity counseling can increase the short-term adoption of physical activity in sedentary middle-aged and older patients. Increase in physical activity was greatest for patients who reported receiving a higher level of specific activity counseling.</p>	<p>Though this study had promising results for following exercise counseling in a single session with one follow-up, more needs to be done to evaluate the short-and long-term effectiveness of physician delivered exercise promotion.</p>

## Physical Activity

Article (14)	Study Design	Intervention	Outcomes	Comments
<p>Pilot Study of Strategies for Effective Weight Management in Type 2 Diabetes: Pounds Off with Empower</p> <p>Mayer-Davis, EJ et al</p> <p>Fam Community Health 2001;24(2):27-35</p>	<p>Sample: n=33</p> <p>Sex: 82% female</p> <p>Socioeconomic level: Appr. 63% income below poverty</p> <p>Ethnicity: appr. 96% African American</p> <p>61% on insulin</p> <p>Avg. BMI: 37.9</p> <p>Randomized Control Trial (RCT)</p> <p>Design and evaluate the effectiveness of the Lifestyle Intervention (LS) and Lifestyle plus Empowerment Evaluation Intervention (LS-EE) programs.</p>	<p>Comparison of 8-week weight management intervention program.</p> <p>Includes initial standardized interview to gain information on age, insulin use, etc. Also included activities such as weekly intervention meetings, weigh ins, blood glucose measurement, and final self-administered questionnaire regarding acceptability of the intervention.</p>	<p>85% retention (28 completed intervention).</p> <p>Overall attendance for 8 weeks was 83%.</p> <p>As of week four, 52% of participants had lost weight. Avg. weight loss did not differ between LS and LS-EE (-1.33 kg, p&lt;0.05 and -1.39 kg, p&lt;0.05, respectively); therefore analyses results were combined. Mean pre- vs. post-intervention difference in weight was <math>-1.15 \pm 1.90</math> kg and BMI was <math>-0.44 \pm 0.71</math> kg/m<sup>2</sup>.</p> <p>Among the 78% who lost weight at week 8, the mean weight loss was 2.00 kg. 66% lost 0.10-2.50 kg, 28% lost between 2.60 to 5.0 kg, and 6% lost between 5.10-7.50 kg. Mean difference in blood glucose was <math>-24.23 \pm 48.24</math> mg/dl (p&lt;0.05).</p>	<p>May be feasible to adapt a research-based weight management intervention for delivery in a primary care setting in rural, medically underserved, low SES population.</p> <p>The addition of a formal evaluation component to the program had no impact at the participant or interventionist level.</p>

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Article (15)	Study Design	Intervention	Outcomes	Comments
<p>Barriers to physical activity promotion by general practitioners and practice nurses</p> <p>McKenna, J., Naylor, P.J., Mc Dowell, N.</p> <p>Br. J. Sports Med. (1998) 32; 242-247</p>	<p>Sample: N= 846; Sample mailed to 846 participants Return rate &gt; 70%</p> <p>A questionnaire that examined the types of barriers to physical activity promotion was mailed to 846 general practitioners (GPs) and practice nurses (PNs) in Southwest England.</p>	<p>Same as study design</p>	<p>69% of GPs and PNs reported that they regularly promote physical activity (PA) with their patients.</p> <p>GPs were less likely to promote PA with their patients if they indicated lack of time or lack of incentives as barriers.</p> <p>GPs and PNs were more likely to promote PA if they themselves were regular exercisers.</p> <p>For PNs, longer consultation times had a higher likelihood of promoting regular PA.</p>	<p>GPs in the action or maintenance stage of changing their own PA are 3 times more likely to regularly promote the same behavior in their patients. For PNs the same difference quadruples.</p> <p>This article demonstrates how professional readiness to change can impact patient counseling behavior.</p> <p>It would be valuable to see whether patient PA levels actually increased in those that were counseled regularly by their providers.</p>



## Physical Activity

Article (16)	Study Design	Intervention	Outcomes	Comments
<p>Effectiveness of physician-based assessment and counseling exercise in a staff model HMO</p> <p>Norris, SL et al</p> <p>Preventive Medicine (2000) 30; 513-523</p>	<p>Sample: N=32 primary care physician providers N=812 patients 30 years and older</p> <p>Randomized controlled trial to assess the effectiveness of Physician-Based Assessment and Counseling for Exercise (PACE)</p>	<p>Groups: regular intervention gp, enhanced intervention gp &amp; control gp.</p> <ul style="list-style-type: none"> <li>Intervention gp: PACE score form, questionnaire, PA info based on their stage of change and 4-wk follow-up call.</li> <li>Enhanced intervention gp: + phone calls at 2,3, &amp; 4 months and postcard reminders at 2,3,4, &amp; 5 months.</li> <li>Providers: baseline questionnaire &amp; 2 months after patient recruitment.</li> </ul>	<p>No significant differences found between the groups.</p>	<p>Explanations for negative results: 1) high baseline PA levels, 2) provider population prevention orientated, 3) contamination of control providers, 4) increased PA levels in all gps due to seasonal effects and 5) lack of sufficient reinforcement for the intervention over the follow-up period.</p>

## Physical Activity

Article (17)	Sample	Study Design	Intervention	Outcomes	Comments
<p>Patrick K., Sallis, J, Prochaska JJ, et al.</p> <p>A multicomponent program for nutrition and physical activity change in primary care: PACE+ for adolescents</p> <p>Arch Pediatr Adolesc Med 2001;155:940-946.</p>	<p>148 adolescents (ages 11-18 yr.) patients from 3 outpatient clinics in San Diego.</p>	<p>Patients completed a computerized assessment in the waiting room and received PA and nutrition counseling from the health care provider. Each assigned to 1 of 4 types of extended intervention: no contact control, frequent mail, infrequent mail and telephone, or frequent mail and telephone. All extended follow-up contact was 4 months.</p> <p>Infrequent contact: 3 calls at 6-weeks intervals.</p> <p>Frequent contact: 8 biweekly counseling calls alternated with 8 "prompt" calls.</p>	<p>PACE+ designed to improve moderate PA, vigorous PA, fat intake, and F&amp;V intake. Adolescents selected 1 nutritional and 1 PA behavior they were most ready to change/maintain.</p> <p>Guided by computer program to develop self-change program. Parental involvement encouraged but left up to adolescent.</p> <p>Provider reviewed action plans with patient. Mailings included tip sheets for goals. Telephone calls were 10 minutes in duration and structured to assess progress, offer praise, discuss barriers, and revise goals (if needed).</p>	<p>Extended intervention did not result in measurable improvements in behavior beyond that provided by PACE+ computer and provider counseling alone.</p> <p>Fat intake decreased 12%, F&amp;V intake increased 18%, vigorous PA increased 10%, moderate PA increased 17%.</p> <p>Adolescents generally expressed high satisfaction with all intervention components.</p>	<p>Without a control group, it is impossible to determine whether changes were due to intervention or chance.</p> <p>A separate evaluation of the initial 2 components of PACE+ (computer program and provider counseling) was not conducted, so no conclusion about their effectiveness can be made.</p> <p>Results of this study indicate that this type of intervention is feasible in primary care settings.</p> <p>A randomized control trial will help determine if this type of intervention is efficacious.</p>

## Physical Activity

Article (18)	Study Design	Intervention	Outcomes	Comments
<p>Acceptability and Feasibility of Physician-Based Activity Counseling the PAL Project</p> <p>Pinto, BM. et al</p> <p>Am J Prev Med (1998) 15 (2) 95-102</p>	<p>24 physician practices; 12 randomized to intervention and 12 randomized to standard care. Physician practices were matched as either sole or group providers.</p> <p>355 patients were enrolled in the study (181 intervention). The mean age of the sample was 65.6 years, 65% of which were in middle-income range. Exclusion criteria included participants who were not sedentary defined as moderate exercise for greater or equal to 30 minutes at least 5 days each week or vigorous exercise for 20 minutes or more 3 days per week. Experimental</p>	<p>The intervention group participated in physician-based physical activity education for elderly adults with an attempt to measure physician-counseling skills, and if significant changes in adult exercise behaviors occurred as a result of physician-based counseling. Physicians received a one-hour training session and support educational materials. Pre and post evaluations were used to measure physician's self-reported exercise counseling behaviors and counseling skills perceptions. Patient evaluations of the exercise counseling and support materials were also performed.</p>	<p>Physicians reported the PALS training was moderately useful in improving their counseling skills (mean 4.1; scale 1-5, 1=not useful at all, 5=very useful). They also recommended PALS training for other physicians practices (4.0; 1.5 scale, 1= strongly disagree, 5= strongly agree) though they did not advocate that PALS become a routine part of their own practices (3.4; 1-5 scale, 1= strongly disagree, 5=strongly agree). No sig. changes were observed in exercise counseling provided to patients. Patients generally reported satisfaction with the exercise counseling and support materials provided. Patients exercise for greater or equal to 30 minutes at least 5 days each week or vigorous exercise for 20 minutes or more 3 days per weeks.</p>	<p>Some bias in that physicians had personal connections to the PI. Physicians seemed to have improved their overall confidence in counseling and PALS seems like a program physicians would regularly want to use in their offices which may minimize its practical applications as an intervention effort. Perhaps greater sampling of physician usage is needed.</p>

## Physical Activity

Article (19)	Sample	Study Design	Intervention	Outcomes	Comments
<p>Prochaska JJ, Zabinski M, Calfas K, et al.</p> <p>PACE+: Interactive communication technology for behavior change in clinical settings.</p> <p>Amer J Prev Med 2000;19:127-131.</p>	<p>12 outpatient clinics, 224 adolescents, 281 adults, 13 providers and 15 office staff.</p>	<p>Acceptability study with patients reporting level of satisfaction with PACE+ computer program and provider counseling.</p>	<p>All patients completed PACE+ in waiting room and received counseling from provider.</p> <p>On site evaluation of computer program conducted. One week after assessment patients contacted by phone for evaluation of provider counseling.</p> <p>Subsample of providers and office staff was asked to report overall satisfaction with program.</p>	<p>Based on Likert scores of 4-5:</p> <p>96% adults and 91% adolescents liked to look and feel of the program.</p> <p>98% adults and 92% adolescents understood the words and ideas.</p> <p>72% adults and 68% adolescents believed the feedback fit them well or very well.</p> <p>85% providers and staff perceived the program as helpful or very helpful.</p> <p>72% were satisfied or very satisfied with how the program was integrated into their office procedures.</p> <p>77% would recommend the program to other primary care offices.</p>	<p>Current evaluation informed the need to:</p> <p>Include more options to enhance the degree of individual tailoring.</p> <p>Reduce text to shorten program completion time.</p> <p>Include better graphics.</p> <p>Interactive health communication technologies have the potential to aid health care providers in clinical settings to assess and intervene on multiple behaviors in a feasible and acceptable manner.</p>

## Physical Activity

Article (20)	Study Design	Intervention	Outcomes	Comments
<p>Effects of Interventions in Health Care Settings on Physical Activity or Cardiorespiratory Fitness</p> <p>Simons-Morton, DG et al</p> <p>Am J Prev Med 1998;15 (4)</p>	<p>Review paper of both primary and secondary prevention PA intervention studies</p> <p>Sample: Of 12 randomized controlled or quasi-experimental studies, of primary prevention studies, sample sizes ranged from 54 to 6000.</p> <p>Mean age: 35-50 years</p> <p>One study was men only, all others included males and females.</p> <p>Seven studies were randomized controlled and five were quasi-experimental.</p> <p>12 randomized controlled or quasi-experimental studies that evaluated physical activity or counseling in primary care settings.</p>	<p>Walking was a common recommended activity in these settings.</p> <p>Eight studies had short term follow up (4 weeks to 4 months after entry)</p> <p>Seven studies had long term follow up ( 6 months to 2 years after study entry)</p>	<ul style="list-style-type: none"> <li>Of the 24 secondary prevention studies, 13 reported significant changes in physical activity or cardiorespiratory fitness compared to the control group, or significant pre-to-post increases in the intervention group with no sig. change in the control group.</li> <li>Six studies used a multiple risk factor intervention, and half of those reported significant results.</li> <li>Eighteen of the studies reported supervised exercise, 11 of those reported significant effects.</li> <li>Seven studies used multiple contacts and a behavioral focus, and five of those demonstrated significant effects.</li> </ul>	<p>Interventions that promote physical activity in primary settings can be effective.</p> <p>Some methodological problems with certain studies.</p> <p>An example would be that 5 of the 12 primary prevention studies did not use randomization, and one study ignored this model in their analysis. Follow-up rates were often not given, making it harder to evaluate the quality.</p> <p>Additional randomized studies are needed that do address F/up rates.</p>

## Physical Activity

Article (21)	Study Design	Intervention	Outcomes	Comments
<p>Cost Effectiveness of a primary care based physical activity intervention in 45-74 year old men and women: a randomized controlled trial.</p> <p>Stevens, W et al</p> <p>Br J Sports Med (1998) 32: 236-241</p>	<p>Sample: 714 inactive people, ages 45-74, selected from two west London general practices were randomized into either an intervention or control group.</p> <p>363 received intervention. Of those, only 126 (35%) attended the 1<sup>st</sup> consultation, and 91 subjects (25%) completed the follow-up questionnaire and returned for the second consultation.</p> <p>8 month follow-up</p> <p>Experimental</p>	<p>The intervention groups received an invitation to a consultation with an "exercise development officer", and were offered a personal 10-week program to increase PA using a "leisure center" and home-based activities.</p> <p>Control subjects received information on local "leisure centers".</p> <p>Self-assessment PA questionnaire administered.</p> <p>Those identified as physically inactive were randomly assigned to intervention group or control group.</p> <p>Intervention Group: received consultation with an exercise officer consisting of: explanation of the intervention, medical lifestyle questionnaire, consent form, BMI, assessment of present PA level, options to become more physically active, and intro to PA diary.</p> <p>Control Group: sent by mail information on local "leisure centers" and health clubs, along with info on PA and health information.</p>	<p>57% response rate to PA questionnaire.</p> <p>91 out of 363 (25%) intervention subjects completed 10-week program.</p> <p>As noted, those who did not participate in a follow-up 8 months later (n=163) were considered to have not made changes in physical activity.</p> <p>Intervention Group: net reduction of those classified as sedentary of 10.6% (CI: 4.5,16.9) and increase of 1.52 (CI: 1.1, 1.6) mean number of episodes of PA per week.</p> <p>79 subjects overall moved into a higher level of activity, with only 17 individuals moving downward in terms of activity. Most notable changes were seen in the sedentary to low intermediate (14%) activity-level ranges and from intermediate to high intermediate (14%) activity-level ranges.</p> <p>Cost effectiveness study done.</p>	<p>Moderate PA can be successfully encouraged in previously sedentary men and women aged 24-74 through primary care based intervention.</p> <p>Results of cost-effectiveness analysis show that recruitment was the most important aspect and it is important to have a high participation rate.</p> <p>Comments: Modest effectiveness of a prescription for exercise in a primary care setting. Extensive self-reporting for all phases of this study. Discussion included whether personal characteristics of the health officer may have influenced outcomes since there was only one health officer conducting all of the consultations. There is little data other than changes in percentage of activity for these individuals, all of which is self-reported.</p> <p>It is questionable whether this would be a valid or reliable intervention for practical applications elsewhere based on the data available with this study.</p>

## Physical Activity

Article (22)	Study Design	Intervention	Outcomes	Comments
<p>Effects of Physical Activity Counseling in Primary Care</p> <p>The Writing Group for the Activity Counseling Trial research group</p> <p>JAMA (2001) 286;677-687</p>	<p>Sample: N=874 (395 female; 449 male)</p> <p>Age 35-75 years (mean age 51-52 yr.)</p> <p>Without clinical CVD</p> <p>SES: 40% with annual income &gt;\$75,000</p> <p>Ethnicity: 33% of minority race/ethnicity</p> <p>Education: 90% of men and 75% of women some college</p> <p>Multi-center randomized clinical control trial to compare the effects of 2 physical activity counseling interventions with current recommended care and with each other in a primary care practice-based setting.</p>	<p>Advice group: received physician advice during a brief 2-4 min process and PA educational materials from a health educator.</p> <p>Assistance group: received same as above. In addition, health educator conducted 30-40 min behavioral counseling session. Received a telephone call 1 wk after visit, step counter, monthly calendar, and mailings.</p> <p>Counseling group: received all of the above. In addition, telephone calls biweekly, monthly after 6 wks during the first year and weekly classes on behavioral skills for PA.</p>	<p>24 month intervention</p> <p>Advice group averaged 3 contacts totaling 18 mins.</p> <p>Assistance group average 22 contacts totaling 3 hours.</p> <p>Counseling group averaged 44 contacts totaling 6 (men)-9 (women) hrs.</p> <p>Men: no significant between group differences in CV fitness or reported total physical activity.</p> <p>Women: At 24 months, CV fitness significantly higher in assistance and counseling groups than in advice group. No differences in reported total physical activity.</p>	<p>The assistance and counseling interventions demonstrated discernable success with women but not men.</p> <p>It seems advisable to use these types interventions for inactive female patients interested in increasing their physical activity, while delivering physician advise and educational materials to men, which is the current recommended care.</p>

## Physical Activity

Article (23)	Study Design	Intervention	Outcomes	Comments
<p>Exercise Counseling by Primary Care Physicians in the Era of Managed Care</p> <p>Walsh, J. M. E. et al</p> <p>Am J Prev Med (1999) 16 (4)</p>	<p>Sample: N=326 Internists, family practitioners, internal medicine, and family practice residents.</p> <p>Survey (questionnaire).</p> <p>Purpose of survey: Assess the proportion of primary care physicians from four hospitals who asked about exercise habits, counseled about exercise, prescribed exercise, and the factors associated with their counseling and prescription habits.</p>	<p>None.</p> <p>No attempt made by researchers to influence providers' behavior.</p>	<p>Response rate 54%. Two-thirds of physicians reported asking more than half of their patients about exercise; 43% counseled more than half their patients about exercise but only 14% prescribed exercise for more than half their patients. Family practice MDs were more likely to ask and counsel about exercise than internists.</p> <p>Barriers: not enough time, lack of knowledge of effective counseling techniques, and lack of knowledge of current guidelines.</p>	<p>Surprising results: Few MDs felt successful in changing patients' health related behaviors. Older MDs ask, counsel, and prescribe more than younger MDs. Older MDs are more likely to provide exercise counseling.</p> <p>Limitations of this study: small sample size, MDs in one geographic setting surveyed (SF Bay Area), and MDs' self-reports may not be accurate.</p>



## Physical Activity

Article (24)	Study Design	Intervention	Outcomes	Comments
<p>Prescribing Exercise for Health: A Simple Framework for Primary Care.</p> <p>Will, P. M. et al</p> <p>Amer Family Physician</p>	<p>Article presents strategies for primary care physicians to use in prescribing individualized physical activity programs.</p> <p>Descriptive.</p> <p>Article is not a pure research study but a presentation of assessment tools, strategies, and rationales to promote exercise prescriptions from primary care providers.</p> <p>“Exercise prescription” is a recommendation for a routine of regular physical activity for health, not for athletic fitness or performance.</p>	<p>None.</p>	<p>Desired outcome is an exercise prescription for daily moderate exercise from primary care providers.</p>	<p>Article describes the components of an exercise prescription (frequency, intensity, type of activity, and time doing that activity); provides tools to assess conditions that benefit from regular exercise (HTN, DM, obesity, etc); tools to assess motivation and guidelines to use when formulating exercise recommendations.</p>

**California Obesity Prevention Initiative  
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**DIET**

<b>Article (25)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>Practical Nutrition Assessment in Primary Care Settings</p> <p>Calfas, K. J. et al</p> <p>Am J Prev Med 2000; 18(4), 289-299.</p>	<p>Sample: None</p> <p>Authors reviewed 18 dietary assessment tools to determine their usefulness in primary care practice.</p> <p>Criteria: Brevity (less than 50 questions), easy to administer score and interpret.</p>	<p>Computer-based literature search on the PSYCHLIT, biomedical, and ERIC databases. Used key words and subject headings: nutrition, measure, questionnaire, assessment, fat, fiber, calorie, fruits &amp; vegetables, calcium, provider, nurse practitioner, primary care, and exercise.</p> <p>Restricted inclusion to those assessment tools that were brief (less than 50 items or less than 15 minutes to complete).</p>	<p>Analysis is summarized in a table with 14 assessment tools.</p> <p>Reliability and validity were slightly less for the shorter tools than more detailed ones.</p> <p>7 assessed saturated fat 4 assessed dietary cholesterol and fruit &amp; vegetable consumption 5 assessed dietary fiber 2 assessed carbohydrates 6 assessed behavioral strategies 2 assessed monounsaturated &amp;/or polyunsaturated fats (Refer to Table 1 in article for detailed information)</p>	<p>Illustrates that providers need a tool that can be scored easily and from which behavioral recommendations can be made easily.</p> <p>Does not clearly identify which assessment tools may be most useful.</p> <p>The utility of tools for different ethnic groups needs further consideration.</p> <p>Tools identified can guide provider counseling.</p>

**REVIEW ARTICLE**  
**Diet**

Article (26)	Study Design	Recommendations	Conclusions/Comments
<p>Freedman MR, King J, Kennedy E</p> <p>Popular Diets: A Scientific Review</p> <p>Obesity Research (March 2001) Vol. 9 Suppl.1</p>	<p>Review of the scientific literature on various types of popular diets based on macronutrient composition.</p> <p>Literature ranked using the NHBLI Grading System: A (randomized controlled trial: rich body of data), B (RCT: limited data), and C (nonrandomized trials/obs.)</p> <p>Diets studied:</p> <ol style="list-style-type: none"> <li>1. High-fat (55-65%), low-carbohydrate (CHO)(&lt;100g of CHO/day) diets (e.g., Dr. Atkins/, Protein Power, Life Without Bread)</li> <li>2. Moderate-fat (20-30%), balanced nutrient reduction diets (e.g., USDA Food Guide Pyramid, DASH diet, Weight Watchers)</li> <li>3. Low-fat (11-19%) and very low-fat (&lt;10%) diets (e.g., Dr. Dean Ornish's Heart Dz. Program, The New Pritikin Program)</li> </ol>	<ul style="list-style-type: none"> <li>▪ Diets that reduce caloric intake result in weight loss. However some diets like the high fat-low CHO diets may result in nutrient deficiencies and may increase the risk for heart disease</li> <li>▪ Optimal weight loss diet is one that maximizes loss of body fat &amp; minimizes loss of lean body mass.</li> <li>▪ Moderate fat, balanced nutrient diet is optimal for ensuring adequate nutritional intake.</li> <li>▪ Very low fat diets are low in vitamins E, B<sub>12</sub> and zinc.</li> <li>▪ Long-term compliance is likely a function of psychological issues rather than macronutrient composition.</li> </ul>	<p>A diet that contains approx. 1400-1500 kcal/day, regardless of macronutrient content, results in weight loss.</p> <p>This is a comprehensive review of the literature related to diet composition and weight loss.</p> <p>Recommend reading full Supplement in Obesity Research for a comprehensive of summary of their evidence-based findings and recommendations.</p>

## Diet

Article (27)	Study Design	Intervention	Outcomes	Comments
<p>Implementing a Dietary Intervention in Primary Care Practice: A Process Evaluation</p> <p>Lazovich, D et al</p> <p>American J. of Health Promotion (2000) 15:118-125</p>	<p>Sample: n = 896 609 Women 287 Men</p> <p>Socioeconomic level: &gt;\$25,000 household income (70%) (1990-92)</p> <p>Education level: College degree (40%)</p> <p>Ethnicity: Caucasian (91%)</p> <p>Randomized controlled trial</p> <p>A self-help booklet to promote dietary change was distributed at the time of a scheduled, non-acute appointment by family practice physicians or office staff. A physician script was provided to introduce the booklet.</p> <p>3-month phone follow-up with the intervention group receiving the booklet and the control group whom did not receive the booklet.</p>	<p>A self-help booklet designed to promote dietary change was distributed to family practice patients at the time of a non-acute scheduled visit.</p> <p>Booklet distribution: 50% by provider 27% by nurse or other office staff 18% by clinic based research assistant 5% by mail</p> <p>3 month phone interview looked at changes in fat and fiber intake between study group and control group.</p> <p>12 month follow-up to check changes in fat and fiber intake.</p>	<p>96% of those receiving the booklet completed the 3-month phone interview.</p> <p>A small, but significant decrease in dietary fat intake in the intervention group occurred after 3 months and was sustained after 12 months.</p> <p>No change in fiber intake between the study and control group after 3 and 12 months.</p> <p>No significant difference in behavior between those who received the booklet from the physician, office staff, or in the mail.</p> <p>Participants more likely to read the booklet as the amount of time spent discussing the intervention increased from less than 1 minute to 3 minutes or more.</p> <p>% Using Booklet: &lt;1 min. ( 90.3%) 1-2 min. (91.6%) 3+ min. (96.5%)</p>	<p>Disparity noted: 72% physicians agree they should provide nutrition counseling. 15%-30% physicians report providing nutrition counseling. 14 % men and 22% women in western Washington reported receiving nutrition advice from their physician.</p> <p>Barriers to providing nutrition counseling:</p> <ul style="list-style-type: none"> <li>• lack of time</li> <li>• lack of patient compliance</li> <li>• lack of materials</li> <li>• lack of training in nutrition counseling skills</li> </ul> <p>Authors concluded dietary interventions could be implemented in a busy primary care practice by the use of a simple tool such as the nutrition booklet they used.</p> <p>Reviewer Comments Efficacy of this same approach with low income, low literacy, or other ethnic groups would need to be studied.</p>

**REVIEW ARTICLE**  
**Diet**

Article (28)	Study Design	Recommendations	Conclusions/Comments
<p>A model for chronic care of obesity through dietary treatment</p> <p>Nonas, Cathy A</p> <p><i>J. Am. Diet. Assoc.</i> (1998) 98: S16-S22</p>	<p>Commentary</p>	<p>A team consisting of a primary care physician &amp; dietitian is a more effective way of treating obesity.</p> <p>The dietitian will monitor the patient throughout all stages of treatment whereas, the physician will monitor the patient closely during the acute stage, and less frequently during the chronic stage.</p> <p>Total energy consumption <math>\geq</math> 800 kcal/day in the acute wt. loss period (&gt;100g of carbohydrates, 72-80g protein, and 20% kcal from fat per day).</p> <p>Medication can be used to further enhance wt. loss.</p> <p>Outcomes are significantly better if patient support is continued after wt loss.</p>	<p>A team can be expanded to include other members such as a psychologist or exercise physiologist depending on the patient's needs.</p> <p>Treatment (behavior modification and dietary intervention) must be individually tailored, adjusted periodically, and lifelong.</p> <p>Modest weight loss of 5-10% can significantly reduce risk factors associated with many chronic diseases.</p>

**REVIEW ARTICLE**  
**Diet**

Article (29)	Study Design	Recommendations	Conclusions/Comments
<p>Dietary Approaches to the Treatment of Obesity</p> <p>Rolls BJ, Bell EA</p> <p>Medical Clinics of North America (March 2000) Vol.84, No.2, 401-418</p>	<p>Review Article</p> <p>Considers the evidence from clinical trials and controlled lab. Studies on the effectiveness of diet strategies for weight loss and weight loss maintenance.</p>	<ul style="list-style-type: none"> <li>▪ Low energy density diets can encourage long-term weight loss maintenance because of wide variety of foods can be included in the diet.</li> <li>▪ Energy density (calories in a given weight of food) is discussed. Authors point out it is key to weight loss and satiety.</li> <li>▪ Weight maintenance: after 6 months, rate of weight loss usually declines and at this stage: combined dietary therapy, behavior therapy, and PA need to be continued. The provider must continue to motivate the patient with long-term monitoring and encouragement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Well written comprehensive review of dietary therapies for weight loss and weight maintenance.</li> <li>▪ According to NIH guidelines: reducing energy intake is the most important element in a weight-loss program.</li> <li>▪ Reducing fat content &amp; increasing PA without restricting energy intake is a relatively inefficient method for weight loss.</li> <li>▪ A diet low in energy density can reduce energy intake while permitting satisfying portions of food. Dieters are then less likely to feel food deprived or hungry.</li> </ul>

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INTERVENTION STUDIES**

**BEHAVIORS**

Article (30)	Study Design	Intervention	Outcomes	Comments
<p>Long-Term Follow-Up and Analysis of More Than 100 Patients Who Each Lost More Than 100 Pounds</p> <p>Felitti VJ, Williams SA</p> <p>The Permanente Journal (1998) Vol. 2 No. 3, 17-21</p>	<p>Retrospective clinical study over 30-month period at Kaiser Permanente, San Diego.</p> <p>Sample: 190 persons who each lost more than 100 pounds. 67% ♀. Mean age: 40 ± 10 years.</p> <p>SPSS database was used. Student's t test and chi-square test were used to identify statistical significance between clients who successfully maintained weight loss and those who were unsuccessful. Success was defined as those who maintained ≥ 50% of their weight loss for at least 18 months after completion of treatment.</p> <p>Multivariate logistic regression analysis were done for family dysfunction criteria and success at weight loss.</p>	<p>A retrospective chart analysis was conducted on 190 persons who each lost more than 100 pounds while participating in the Kaiser Permanente Weight Control Program. Follow-up comparisons were conducted at 18 and 30-month periods.</p> <p>Participants in the program followed a very-low-calorie (VLCD) diet program.</p> <p>Mean initial weight and BMI data were compared at 18 and 30-month follow-up and correlated with success at weight loss and dysfunctional family criteria.</p> <p>Dysfunctional family criteria included: Hx. of: depression; personal, parental or spousal alcoholism; sexual abuse, incest, psychiatric hospitalization, childhood loss of a parent, household homicide, household suicide, imprisonment, eating disorder, physical abuse or a combination of these factors.</p>	<p>Of 190 severely obese clients participating in the Kaiser Permanente Weight Control Program in San Diego, 50% or over half, maintained 60% of their weight loss for at least 18 months after completing treatment. 61.1 ± 34.8 % (♀ and ♂) had regained weight at 30 months.</p> <p>66% had a history of depression as defined by DSM III criteria.</p> <p>Overall prevalence of history of sexual abuse was 39%.</p> <p>Criteria associated with failure to maintain weight loss was associated with:</p> <ul style="list-style-type: none"> <li>• Hx. of incest (p&lt; .01)</li> <li>• Hx. of other sexual abuse (p&lt;.01)</li> <li>• Women with family history of eating disorders (p&lt;.03)</li> <li>• Women with alcoholic spouses (p&lt;.04)</li> </ul>	<p>This study shows that successful treatment of the severely obese is possible.</p> <p>Providers must also understand that the main focus of treatment is not obesity but the causal factors contributing to obesity.</p> <p>Providers must recognize that there may be underlying psychological and familial contributing factors to obesity. Assessments should include questions about family history and histories of abuse, alcohol and substance abuse.</p> <p>Reviewer Comments:</p> <p>30-month follow-up demonstrated less success at maintaining weight loss.</p> <p>No racial data. Primarily professional, business or administrative occupations.</p> <p>There is a need for further research in this area.</p>

## **Behaviors**

<b>Article (31)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>Obesity Management In Primary Care: Assessment of Readiness to Change Among 284 Family Practice Patients</p> <p>Logue, E et al</p> <p>J. Am Board Fam Pract (2000) 13: 164-171</p>	<p>Sample: n = 284</p> <p>Overweight: BMI (25-29.9) = 20% of sample, Obese: BMI (30.0+) = 79% of sample; Borderline Overweight: BMI (23.0-24.9)= 1% of sample</p> <p>Mean BMI = 35.9</p> <p>Ages 30-69 (mean 46.5 years); Female: 81%, Male: 19%</p> <p>Socioeconomic level: Unknown.</p> <p>Ethnicity: Unknown</p> <p>Prospective Study</p> <p>Study participants recruited from a community-hospital-affiliated family practice center by nursing staff and physicians. Recruits for the study were drafted after routine appointments and were not considered to be acutely ill.</p>	<p>The study objective was to explore the feasibility of a primary care obesity intervention based on the transtheoretical model (TM) of behavior change and principles of chronic disease care (CD).</p> <p>Questionnaire was administered by an office nurse to assess readiness to change in 6 weight-related target behaviors: increased planned exercise increased daily activity increased fruit intake increased vegetable intake decreased dietary fat decreased portion sizes</p> <p>Participants chose 1 of 5 statements that best described their readiness to change each of the 6 weight-related target behaviors.</p> <p>Stages of Change Assessed:</p> <ul style="list-style-type: none"> <li>• Pre-contemplation</li> <li>• Contemplation</li> <li>• Preparation</li> <li>• Action</li> <li>• Maintenance</li> </ul>	<p>Preparation was the most frequently reported stage for: Increased exercise (49%)</p> <p>Increased activity (34%)</p> <p>Decreased dietary fat intake (44%)</p> <p>Increased portion control (51%)</p> <p>Participants in a stage for one behavior were distributed across all five stages for another behavior.</p> <p>Largest correlation is between stages for increased activity vs. increased exercise (0.49).</p> <p>Heterogeneity of the stages for the 6 target behaviors.</p> <p>Stage of change for 5 target behaviors was associated with BMI or waist girth. The only exception was for increased vegetable consumption.</p>	<p>A transtheoretical model intervention directed at multiple, specific obesity-related behaviors might be more effective than the traditional prescription to eat less and exercise more.</p> <p>Traditional eat-less, exercise-more prescription is a complex macro-behavior.</p> <p>More research is needed to discover degree of behavioral partitioning most consistent with optimal transtheoretical-chronic disease management of obesity.</p> <p>The challenge is finding time and resources to support tailored weight management interventions in current and future fiscal environments.</p> <p>Reviewer Comments: Practical aspects of administering such a tool by medical staff with all the other required paperwork may not be feasible in an office setting.</p>



## **Behaviors**

<b>Article (32)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>The perceived relative worth of reaching and maintaining goal weight</p> <p>O'Neil, PM et al</p> <p>Int. J. of Obesity (2000) 24: 1069-1076</p>	<p>Sample: n = 120</p> <p>25 obese treatment seekers (BMI 42.5, age 41.0 yr.)</p> <p>31 obese non-treatment seekers (BMI 32.2, age 40.8 yr.)</p> <p>64 non-obese (BMI 23.4, age 32.4 yr.)</p> <p>Socioeconomic level: Unknown</p> <p>Ethnicity:</p> <p>White (n = 73)</p> <p>Black (n = 41)</p> <p>Other (n = 6)</p> <p>Cross-sectional Study</p>	<p>An 18-item forced-choice questionnaire administered to participants to see what they would hypothetically sacrifice to reach and maintain their goal weight.</p> <p>Obese treatment seekers had attended free information sessions at a medical school weight management center to learn about fee-based weight loss treatment programs.</p> <p>Subjects in the obese non-treatment group and the non-obese group were recruited from people waiting in line at the DMV. Their heights and weights were self-reported.</p> <p>All participants were asked the same question: "What is your goal weight?"</p> <p>The same 18 questions with a 2 choice response were asked and the responses scored numerically.</p> <p>Relative worth index was used as an approximation of the overall worth attached to attainment of goal weight.</p>	<p>Non-obese group significantly younger than the 2 obese groups.</p> <p>Goal weight expressed as a percentage of current weight differed significantly among the 3 groups:</p> <p>34% desired reduction for obese treatment seekers.</p> <p>20% desired reduction for obese non-treatment group.</p> <p>2% desired reduction for non-obese group.</p> <p>Participants were more willing to forgo a positive event than to experience a negative event. Choices had to do with winning a car, being promoted, or winning a vacation.</p> <p>Few participants were willing to incur medical problems as a cost of reaching goal weight.</p> <p>Females tended to place more importance on reaching and maintaining goal weight than males, but only 3/18 questions were statistically significant.</p>	<p>Obese persons were found to attach great importance to the goal of weight loss.</p> <p>For both obese and non-obese females relative worth index was significantly correlated with current weight and BMI.</p> <p>Limitations of the study were noted to be that the findings were based on responses to hypothetical situations and the restricted sample size of the treatment –seeking group.</p> <p>The final conclusion was that public health messages should aim at helping people to have realistic weights associated with decreased morbidity and mortality rather than self-selected hard to attain weight ideals.</p> <p>Reviewer Comments: Interesting questions, but the article was difficult to follow in trying to extract more specifics re: sex and ethnicity of the 3 groups.</p>

## **Behaviors**

<b>Article (33)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>Psychosocial Predictors of Changes in Physical Activity in Overweight Sedentary Adults Following Counseling in Primary Care</p> <p>(The Change of Heart Study)</p> <p>Steptoe A et al</p> <p>Prev Med 2000;31:183-194</p>	<p>Sample: n=883 recruited to participate in study</p> <p>The following completed physical activity assessments at 4 and 12 months and were analyzed for this report:</p> <p>n=505 at 4 month reassessment 271 women 234 men</p> <p>n=418 at 12 month reassessment 231 women 187 men</p> <p>Majority of the patients who completed this study were married, middle-aged with limited formal education.</p> <p>Ethnicity: unknown</p> <p>Randomized Control Trial</p>	<p>Patients were assessed individually by nurses located at 20 general practices (10 control practices and 10 intervention practices) in the United Kingdom. Measures included: cardiovascular risk factors (blood pressure, blood cholesterol, anthropometry, biochemically validated smoking status). Nurses provided counseling to patients at the 10 intervention general practices on such topics as dietary fat reduction for those with high cholesterol, increasing exercise for those with a high BMI and low activity, and smoking cessation for those who smoked. Patients also completed a questionnaire of psychosocial measures prior to counseling. Patients were considered dropped out of the study if they did not complete physical examinations at 4 and/or 12 months.</p>	<p>No changes to demographics or psychological variables between patients at the 4 month and 12 month reassessments. Baseline: Physical activity was associated with educational status, having a partner who was more active, perceived barriers, and self-efficacy.</p> <p>4 months: Increase in physical activity was greater with behavioral counseling, in non-smokers, and in patients with higher ratings of motivation to change and self-efficacy at baseline.</p> <p>12 months: Change in physical activity was greater with behavioral counseling and was predicted in the behavioral group by social support variables, perceived benefits, and barriers. Stage of readiness to change predicted increased activity at 4 but not 12 months.</p> <p>There was a higher increase in physical activity for the behavioral counseling group than the control group.</p>	<p>Generalizing study results to wider population groups is limited due to the risk factors that the study subjects had: increased risk for cardiovascular disease, high BMI, 1/3 were smokers, and an average total cholesterol concentration of more than 232 mg/dl.</p> <p>There was a high drop out rate, particularly among young smokers and those that proceeded with the study may have been more determined to change their behavior. Reporting bias may be present due to physical activity being assessed by interview and questionnaire rather than objective indices.</p> <p>Reviewer Comments: Comprehensive counseling (includes information on health education, attitude change, incentives, self-monitoring, goal setting, and relapse prevention) rather than just advice from the medical professional may have a larger impact on behavior change for physical activity.</p>

**REVIEW ARTICLE**  
**Behavior**

Article (34)	Study Design	Recommendations	Conclusions/Comments
<p>Use of Preventive Health Care Services by Patients with Obesity</p> <p>Zayat E.N., Fontaine K.R., Cheskin L.J.</p> <p>Obesity Research (1999) 7(2): 223-226</p>	<p>Review Article and Commentary</p>	<p>Findings: Although recent studies show that BMI is found to be associated with increased physician visits there is also mounting evidence that less preventive care is being delivered to individuals with obesity compared to the non-obese.</p> <p>Studies found that self-report of annual pelvic exams and breast exams decreased with increasing body weight. However there was no significant effect on the rate of mammography.</p> <p>Survey of physician attitudes found that even though physicians strongly agree that it is important to treat obesity all groups felt only moderate-to-low confidence in there effectiveness to treat it. They also reported low exposure to training in obesity and nutrition. Male physicians tend to be more reluctant to perform a pelvic exam on obese patients.</p>	<p>Refer to article for specific references.</p> <p>Health care providers tend not to be adequately educated and trained to treat obesity and address their obese patients' preventive health care needs. There is a need to increase training on nutrition and obesity in medical school curriculum.</p> <p>Ensuring that obese individuals receive appropriate preventive care can have substantial health benefits by reducing morbidity and associated health care costs.</p> <p>There is a need for additional research comparing the effectiveness of different preventive approaches and the management of obesity.</p> <p>Evidenced-based guidelines for the prevention and treatment of obesity need to be promulgated and instituted.</p>

**California Obesity Prevention Initiative  
Health Systems Work Groups**

**WEIGHT MANAGEMENT**

Article (35)	Study Design	Intervention	Outcomes	Comments
<p>Rethinking Traditional Weight Management Programs: A 3-Year Follow-up Evaluation of a New Approach</p> <p>Carrier KM, Steinhart MA, Bowman S</p> <p>The Journal of Psychology (1994) 128(5), 517-535</p>	<p>Cohort Study</p> <p>N=37 Program dropouts: N=28</p> <p>Participants and Follow-up: N =14</p> <p>70% Female</p> <p>Mean ♀ BMI: 25.3 ± 4.8 Mean ♂ BMI: 28.1 ± 3.5</p> <p>Subjects: Concoco Inc.(Texas) employees who signed up for the Wellness Departments' 6-month "Eat for L.I.F.E." program and completed 3-year follow-up questionnaires.</p> <p>L.I.F.E. stands for: Long-term change: Image of self: Fun: Enjoyment of eating.</p>	<p>The Eat for L.I.F.E. program consists of 20 class sessions over a 6-month period with 45-minute classes each week.</p> <p>Class Segments: Segment 1: Overcoming overeating, Segment 2: The body/mind connection, Segment 3: Free to eat, Segment 4: Everyday eating plus Follow-up sessions: Weekly Support Group and/or Theme Sessions held every 2 months.</p> <p>Participants were sent a Pre-, 3 months, 6 months and 3-year follow-up questionnaire to assess the mastery of internally directed eating style. The questionnaire assessed dieting behavior, self-esteem, and attitudes towards eating and body weight.</p> <p>Also 2 informal interview sessions were conducted prior to participation and after 20 class sessions. 1<sup>st</sup> 15 min. interview assessed eating history and motivations to attend class. 2<sup>nd</sup> interview was to assess effectiveness of " Eat for L.I.F.E."</p>	<p>This study evaluated the effectiveness of a non-diet approach to reduce restrained eating behaviors and improve self-acceptance, self-esteem, and physical activity.</p> <p>Analysis of variance (ANOVA) indicated that Eat For L.I.F.E. participants were able to significantly decrease restrained eating behavior &amp; increase self-acceptance, self-esteem, and level of physical activity. Participants were also able decrease frequency of weighing-in behavior.</p>	<p>Strategies fostering internally directed eating behaviors maymight be more centrally related to an individual's well-being than programs supporting externally directed eating behaviors.</p> <p>Small sample size.</p> <p>Minimal data collection on BMI (only initial BMI's reported).</p> <p>Refer to article for details. Article also includes a good introductory debate about some of the pitfalls of traditional weight management programs and their focus on weight, as well as a discussion about restrained eating habits, binge eating, and those overdriven to exercise.</p>

**REVIEW ARTICLE**  
**Weight Management**

Article (36)	Study Design	Recommendations	Conclusions/Comments
<p>Weight management and fitness in the community</p> <p>Fitzgerald, G</p> <p><i>J Roy Soc Health</i> (1996) 116:264-265</p>	<p>Commentary</p> <p>Summary of weight management and fitness in the community conference held on July 1996 by the Royal Society of Health in London.</p>	<ul style="list-style-type: none"> <li>• Important to emphasize increased activity as well as not overeating.</li> <li>• Focus on children and adolescents to provide good habits to prevent them from becoming overweight when they are adults.</li> <li>• Family and community play an important role in encouraging children to be more active.</li> <li>• Interventions such as one to one counseling, looking at behavioral models, and membership to slimming clubs may help the overweight.</li> <li>• Physical activity messages should be prescriptive and encourage a person to be more active.</li> <li>• Community-based providers can be a valuable weight management resource for their patients.</li> <li>• It's important not to neglect the elderly population with regard to promoting physical activity.</li> </ul>	<p>Summarized presentations of various speakers.</p> <p>Although the assumption can be made that most of the time conclusions and recommendations are based on the presenter's research and review of literature, this report is of limited value as there is no list of references.</p>

## Weight Management

Article (37)	Study Design	Intervention	Outcomes	Comments
<p>Are Health Care Professionals Advising Obese Patients to Lose Weight?</p> <p>Galuska, Da et al</p> <p>JAMA Oct.27, 1999 282:16 1576-1581</p>	<p>Sample: N = 12,835 Obese adults who had visited their primary care physician within the last 12 months</p> <p>Obese = BMI of 30kg/m<sup>2</sup> or more</p> <p>No pregnant women</p> <p>Socioeconomic level: unknown</p> <p>Ethnicity: Non Hispanic white = 9671 Non Hispanic black = 1862 Hispanic = 688 Other = 414</p> <p>Cross-sectional Survey</p> <p>The Behavioral Risk Factor Surveillance System, a random-digit telephone survey was used.</p> <p>Self-reporting of (1) health care professional discussing weight loss with them and (2) their efforts to lose weight</p>	<p>Through a telephone survey, participants self reported the answers to the following questions: (1) Within the last 12 months a health care professional has given you advice about your weight? (2) Are you now trying to lose weight? Yes = persons attempting to lose weight.</p>	<p>42% reported they had been told by a health care professional to lose weight. 66.6% of all participants were attempting to lose weight. 79.5% of the participants receiving advise were attempting to lose weight as compared to 57.6% of the not given advise participants.</p>	<p>Potential concerns: (1) potential answers of those who refused to participate (2) potential answers of the population who had no telephones</p> <p>Participants who were more likely to receive advice were women with some college education and lived in the northeast.</p>

## Weight Management

Article (38)	Study Design	Recommendations	Conclusions/Comments
<p>Weight Loss Management: A Path Lit Darkly</p> <p>Hawks, SR; Gast, J</p> <p>Health Education and Behavior (June 2000) 25(3); 371-382</p>	<p>Review article.</p> <p>This article presents a historical review of weight loss paradigms and questions the assumption that obesity is a chronic disease. The authors point out that it may be much better to address the epidemic of physical inactivity and poor eating habits rather than focusing on promoting body thinness.</p>	<ul style="list-style-type: none"><li>• Calorie-restricted dieting seems inadvisable due to the negative changes it produces in resting metabolic rate and fat storage potential.</li><li>• Low-fat and calorie restricted diets tend to promote feelings of nutritional inadequacy and feelings of deprivation which may lead to yo-yo dieting.</li><li>• The combination of media promoting culture of thinness and deprivation-based programs may help contribute to feelings of guilt, low self-esteem, and eating disordered behavior.</li><li>• Emphasis should be on lifestyle management not VLCDs, pills, and diets.</li></ul>	<p>This article really questions the benefits of focusing on weight loss and promotes the concepts of improving physical activity and healthy eating in addition to promoting more emphasis on environmental change.</p>

## Weight Management

Article (39)	Study Design	Intervention	Outcomes	Comments
<p>Effective long-term treatment of obesity: a continuing care model</p> <p>Latner, JD et al</p> <p>Int. J. of Obesity (2000) 24;893-898</p>	<p>Sample: n= 171 146 women, BMI of 33.2± 4.4 25 men, BMI of 35.1± 5.2</p> <p>Socioeconomic level: unknown.</p> <p>Ethnicity: unknown.</p> <p>Cohort Study</p> <p>Design and evaluate the effectiveness of the Trevoze Behavior Modification Program</p>	<p>Low cost, lay administered weight loss program. Includes 1hour weekly meetings, weigh-ins, self-monitoring of food intake and physical activity, measures to slow the rate of eating and social support.</p>	<p>Mean duration of treatment: 27.1 months.</p> <p>47.4% of members still in treatment at 2 yr.</p> <p>21.6% in treatment at 5 yr.</p> <p>Of those who remained in treatment, almost all participants lost at least 5% of their initial weight. At least 83% lost more than 10%.</p> <p>Members completing 2 yr. of treatment had average weight loss of 19.3%; 5 yrs at 17.3%</p>	<p>Low cost, lay administered program produced substantial long-term weight losses and may be suitable for widespread replication.</p>



## Weight Management

Article (40)	Study Design	Recommendations	Conclusions/Comments
<p>Physicians need practical tools to treat the complex problems of overweight and obesity.</p> <p>Lenfant, C.</p> <p>Am Fam Phys 2001; 63 (11): 2139,cont 2145.</p>	<p>Commentary/Review article on guidelines to reduce the prevalence of overweight and obese Americans (55% of the adult population is overweight).</p>	<p>Guidelines released by the NHLBI state: the assessment for being overweight is evaluated by BMI, waist circumference, and a patient's risk factors for diseases.</p> <p>"The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults" can be found online at:<a href="http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm">http://www.nhlbi.nih.gov/guidelines/obesity/ob_home.htm</a></p> <p>This comprehensive guide contains the basic info for providers to assess and manage overweight patients. Includes patient handouts on diet therapy, menu plans, tips on healthy shopping and cooking, on physical activity, behavior therapy, etc.</p>	<p>It is imperative for practitioners to counsel their patients on the importance of modifying their eating and to increase their physical activity in order to maintain a healthy weight.</p>

## Weight Management

Article (41)	Study Design	Intervention	Outcomes	Comments
<p>Weight Loss Counseling by Health Care Providers</p> <p>Nawaz H. et al</p> <p>Am J of Public Health (1999) 89 (5); 764-767</p>	<p>Sample: 1254</p> <p>Retrospective review of data collected on the 1994 Connecticut Behavioral Risk Factor Surveillance System (BRFSS) survey.</p> <p>Random telephone survey of the adult population in Connecticut.</p> <p>25% identified as overweight (using BMI &gt; 27.3 women and &gt;27.8 men)</p> <p>Adults, men, and women (largely white, 89%)</p>	<p>None</p> <p>Study to examine results of the BRFSS to determine the frequency of weight management counseling by health care providers of overweight adults and the current weight loss practices of overweight adults.</p>	<p>Overall 71% of overweight adults were not counseled to lose weight. Among overweight adults with cardiac disease, only 50% received counseling.</p> <p>Weight loss counseling was higher for older adults, those reporting elevated cholesterol levels and diabetes.</p> <p>Overweight adults reporting smoking or sedentary lifestyles were not more likely to be counseled on weight loss. There was a direct and significant relationship between the number of additional cardiovascular risk factors and the likelihood of weight loss counseling.</p> <p>63% of overweight adults reported current attempts to lose weight. Among those who received counseling from their providers, 89% reported current attempts to lose weight as compared to 52% among those who were not counseled.</p> <p>Of those overweight adults reporting trying to lose weight, those counseled were more likely to report consuming fewer calories and less fat and increasing physical activity.</p>	<p>Findings do suggest that more provider counseling on weight loss is indicated.</p> <p>Authors conclude more physician training and resources are needed. They also suggest changes in reimbursement to make counseling more attractive.</p> <p>Behaviors reported by those trying to lose weight (reduction in fat and calories and increase in exercise) are the ideal methods for achieving weight loss.</p> <p>Pattern of provider counseling suggests an emphasis on secondary and tertiary prevention and a neglect of primary prevention of obesity.</p> <p>Limitations: Study relies entirely on self-report.</p> <p>Not possible to determine who initiated the discussion (patient or physician) even among those counseled.</p> <p>The 1994 BRFSS omitted hypertension.</p>

**REVIEW ARTICLE**  
**Weight Management**

Article (42)	Study Design	Recommendations	Conclusions/Comments
<p>American Heart Association (AHA) Guidelines for Weight Management Programs for Healthy Adults</p> <p>Nicolosi,R et al (Nutrition Committee)</p> <p>Heart Disease and Stroke (July/August 1994) 3; 221-228</p> <p><a href="http://www.americanheart.org/presenter.jhtml?identifier=1226">http://www.americanheart.org/presenter.jhtml?identifier=1226</a></p>	<p>Recommendations for weight management programs, developed by the AHA Subcommittee of Nutritionists, and reviewed by the AHA Nutrition Committee.</p> <p>Guidelines were developed for use by healthy adults. They are <u>not</u> intended for the severely obese, children under 18, the elderly, or adults with preexisting illness or metabolic disorders such as diabetes, who should be treated by a qualified health care team.</p>	<ul style="list-style-type: none"> <li>• Patient informed consent.</li> <li>• Screening of all persons with an appropriate medical history form entering a wt. Program.</li> <li>• Guidelines for physician referral.</li> <li>• Staffing by individuals qualified in education and experience, such as RDs.</li> <li>• Identification of reasonable weight loss goals.</li> <li>• Individualized nutritional, exercise, and behavioral components.</li> <li>• Maintenance program for at least 2 years.</li> <li>• Evaluation of long-term effectiveness and safety of the program by review of weight loss status at 1,2, and 5 years after program completion.</li> <li>• Meet at least once a week for at least 12-24 weeks (12 per year).</li> </ul>	<p>This article gives an overview of the essential components and staffing requirements for an adult weight management program.</p>

## Weight Management

Article (43)	Study Design	Intervention	Outcomes	Comments
<p>The High Prevalence of Obesity in Michigan Primary Care Practices</p> <p>Noel, M et al</p> <p>The Journal of Family Practice, Vol 47, No. 7 1998 (39-43)</p>	<p>Sample: n=5,267 1,881 men mean age 52.1 3,386 women Mean age 49.9</p> <p>Rates of overweight patients in primary care practices were compared to rates from the Michigan Behavioral Risk Factor Survey (MBRFS) of 1993 and the National Health and Nutrition Evaluation Survey (NHANES) III Phase I.</p> <p>Measured patients at urban and rural family practices in Northern Michigan. Measured height, weight, and calculated BMI. Gathered patient data regarding income, race, diabetes mellitus, and heart disease.</p>	<p>Observational study/survey</p>	<p>In all income categories, the prevalence of overweight patients in primary care practices was greater than the prevalence of overweight patients in MBRFS. Age adjusted rate for overweight was 51.0% &amp; 28.5% for severely overweight. Patients from primary care practices had nearly twice the rate of overweight found in the population based studies: MBRFS (29.1% overweight) &amp; NHANES III Phase I (33% overweight, 14% severely overweight). Adjusted rates of overweight were higher in rural practices compared to urban. (52.5% vs. 47.2%)</p>	<p>Population based prevalence rates for overweight may not reflect rates in primary care practices. The prevalence of obesity in primary care practices may be higher than the rates estimated in population based surveys because overweight people may be more likely to visit their physicians than healthy or underweight individuals. The authors speculate that this phenomenon is not unique to Northern Michigan and is typical of primary care practices in the US. A possible reason for this phenomenon is that overweight people have more health problems and more comorbidities such as diabetes, heart disease, osteoarthritis, hypertension, and mental health issues. Moreover, the authors speculate that this phenomenon is a function of the “worried well,” in that obese people are more concerned about their health; consequently, they represent a large percent of the “worried well” who visit primary care practices.</p>

## Weight Management

Article (44)	Study Design	Intervention	Outcomes	Comments
<p>Professional Advice and Readiness to Change Behavioral Risk Factors Among Members of a Managed Care Organization</p> <p>O'Conner, PJ et al</p> <p>Am J Manag Care 2001;7:125-130</p>	<p>Sample: n=3826</p> <p>2113 women, 94.1% Caucasian</p> <p>1713 men, 94% Caucasian</p> <p>Socio-economic level: unknown</p> <p>Cross-sectional study</p>	<p>A telephone interview assessed behaviors related to smoking, diet, and physical activity and respondents readiness to change these behaviors. Questions that defined the 5 stages of readiness to change (precontemplation, contemplation, preparation, action, and maintenance) were included in the interview.</p>	<p>Complete data for analysis was available for 621 current smokers, 1553 participants who reported eating a high fat diet, and 1410 participants with reported physical activity of &lt;20 min/d, 3 times/week. After controlling for demo-graphic variables and for use of preventive services, greater readiness to change for smoking (Odds Ration [OR] = 1.40), diet (OR = 1.70), and physical activity (OR = 1.92) was associated with having received professional advice to change these behaviors.</p> <p>This study focused on the level of readiness to change behaviors so outcomes cannot be qualified as short-term or long term.</p>	<p>Data interpretation is limited due to the design of the study. Generalizing results across less educated or lower income population groups and other clinical situations is uncertain.</p> <p>Reviewer Comments: Counseling or advice from a medical professional appears to be a strong motivating factor for increasing readiness to change behavior. However, it is unknown whether the professional advice was provided to the member at the clinic or via telephone. If professional advice was received at the clinic, it is unclear whether the information was given in a group class setting or individually which limits the interpretation of the results even further.</p>

## Weight Management

Article (45)	Study Design	Intervention	Outcomes	Comments
<p>Weight Management: What Patients Want From Their Primary Care Physicians</p> <p>Potter, MB et al</p> <p>J of Family Practice (2001) 50 (6); 513-518</p>	<p>Sample: N = 366 BMI &lt; 25 = 44% BMI 25-30 = 28% BMI &gt; 30 = 29%</p> <p>2/3 managed care, 10% Medicare and 10% Medi-Cal</p> <p>Mixed ethnicity adults (non- pregnant)-San Francisco clinic pop.</p> <p>Convenience sample survey in two primary care clinics in San Francisco, CA.</p> <p>Patients completed a survey in a primary care waiting room and afterwards were measured for BMI.</p>	<p>Survey administered to patients in waiting room.</p> <p>Study to obtain an understanding of patients' weight management experiences with physicians from the patient's point of view.</p>	<p>366 of 410 approached patients participated (89%)</p> <p>Patients believed weight loss needed: 97% of those with BMI&gt;30 84 % with BMI 25-30 39% with BMI &lt;25</p> <p>Patients who discussed weight with their current physician 49% of BMI &gt; 30 24% BMI 25-30 12% BMI &lt;25</p> <p>Types of weight management assistance patients wanted from their physicians = dietary advice, help in setting realistic weight goals, and exercise recommendations.</p> <p>Obese patients were more likely to be African-American or Latino and less likely to be Asian American.</p> <p>The most common experience reported was that physicians had not brought up weight.</p> <p>Predictors for physician patient discussion about weight in the past were diagnoses of diabetes, high cholesterol, and depression.</p>	<p>All patients in this population who might benefit from weight loss believed they needed to lose weight.</p> <p>35% BMI &gt;30 and 20% BMI 25- 30 believed a referral to a weight loss program could help them lose weight.</p> <p>Only a minority of patients had discussed their weight with physicians in the past. Physicians had targeted discussion to those patients with higher BMIs and co- morbidities.</p> <p>Vast majority of patients are willing and eager to discuss their weight with their current physician. Many wanted a more comprehensive approach including dietary advice, exercise recommendations, and help in setting realistic weight goals.</p> <p>Surprising finding that 39% of patients with BMI &lt;25 felt they needed to lose weight. Physicians may need to help these patients feel comfortable with their current weight. Limitations: Relatively small sample. All data except for BMI are self- reported.</p>

## Weight Management

Article (46)	Study Design	Intervention	Outcomes	Comments
<p>Assessment of body composition change in a community based weight management program.</p> <p>Powell LA, et al</p> <p>J Am Coll Nutr 2001; 20 (1): 26-31.</p>	<p>Sample: n=201 (obese and overweight women)</p> <p>Socioeconomic level: Unknown.</p> <p>Ethnicity: unknown.</p> <p>Cross-sectional study</p> <p>To validate the use of the leg-to-leg bioelectrical impedance analysis (BIA) system in assessing change in body composition over 32 weeks. BIA test results were compared with underwater weighing and seven skinfolds.</p>	<p>A 32-week energy-restricted diet and exercise program. Body composition was measured before the study and after 12- and 32-weeks.</p>	<p>ANOVA revealed no significant difference in detecting change in fat-free mass (FFM) in underwater weighing (decrease in FFM of <math>1.0 \pm 3.3</math>kg), BIA (<math>1.7 \pm 2.2</math>kg), and skinfold (<math>1.4 \pm 3.3</math> kg).</p>	<p>Compared to underwater weighing, the BIA system provides a quick, valid, and accurate body composition measurements for overweight and obese premenopausal women.</p>

**REVIEW ARTICLE**  
**Weight Management**

Article (47)	Study Design	Recommendations	Conclusions/Comments
<p>The Case for Medical Management of Obesity: A Call for Increased Physician Involvement</p> <p>Rippe, J.M.</p> <p>Obesity Research (April 1998) V. 6. Supl. 1; 23S-33S</p>	<p>Review and Commentary.</p> <p>In this article, the author reviews major studies that demonstrate the correlation between obesity and the increased risk for co-morbidities such as Type 2 diabetes, coronary heart disease, hypertension, and dyslipidemias. The article also reviews the effects of weight loss and exercise on the reduction of these co-morbidities. The author then puts forth a proposed chronic disease model for the treatment of obesity in clinical practice.</p>	<p>The author points out that the medical community has not been active enough in the treatment of obesity and recommends the following:</p> <ul style="list-style-type: none"> <li>• Weight, BMI, and waist circumference should be routinely recorded during physician encounters.</li> <li>• Patients should be routinely counseled on specific actions related to lifestyle and obesity.</li> <li>• Emphasize the importance of physical activity in reducing risk factors for chronic disease.</li> <li>• Nutrition counseling from a registered dietitian may be valuable.</li> <li>• Consultation with a psychologist experienced in behavior modification may be helpful.</li> <li>• Pharmacologic therapy may be indicated.</li> </ul>	<p>Although the author gives a fairly comprehensive review of the literature on the risks associated with obesity, his justification for his treatment recommendations would be enhanced by additional literature review.</p>



**REVIEW ARTICLE**  
**Weight Management**

Article (48)	Study Design	Recommendations	Conclusions/Comments
<p>A multidimensional weight-management program for women</p> <p>Senekal, M, et al</p> <p><i>J Am Diet Assoc</i> (1999) 99;1257-1264</p>	<p>Commentary</p>	<p>Weight management interventions should be based on a multidimensional approach.</p> <p>Weight management paradigm-continuum consisting of 5 points:</p> <ul style="list-style-type: none"> <li>• Formulation of reasonable weight goals.</li> <li>• Prevention of unnecessary weight gain or loss.</li> <li>• Weight loss when necessary.</li> <li>• Prevention of relapse.</li> <li>• Acceptance of overweight/obese physique.</li> </ul>	<p>Must also consider intrapersonal characteristics such as self-esteem, body image, etc., as well as stages of change and environmental influences.</p>

## Weight Management

Article (49)	Study Design	Intervention	Outcomes	Comments
<p>School-based Weight Management Services: Perceptions and Practices of School Nurses and Administrators</p> <p>Stang, Story &amp; Kalina</p> <p>Am J Health Promotion 1997, 11 (3) 183-185</p>	<p>Survey</p> <p>Random Sample: 630 school nurses (randomly generated list, stratified for location &amp; size) 1137 School administrators (included all employed in schools that taught grades 1-8)</p> <p>Final sample used: n= 829</p> <p>533 administrators – 73% male, 96% principals, 4% superintendents, 71% elementary schools, 14.5% jr. high, 4.0% K-12, 7.8% other. 58.4% rural, 30.4% suburban, 10.7% urban</p> <p>296 nurses – 97% female, 25.7% elementary schools, 5.1% middle/jr. high, 8.4% high school, 53.4% K-12, 6.8% other. 23% urban, 35.1% suburban, 40.9% rural.</p> <p>Statewide survey of school administrators and school nurses.</p>	<p>32-item questionnaire survey mailed out.</p> <p>Survey was designed to assess perceptions of obesity, the school's role in providing weight management curricula, and services and current practices.</p>	<p>45% of administrators &amp; 72% of nurses reported offering screening &amp; assessment services to overweight students.</p> <p>24% of nurses and 38% of administrators reported having curricula including wt. mgmt.</p> <p>The items nurses reported they preferred include: packets of information, written materials, assessment and treatment guidelines, and materials for parents.</p> <p>Barriers identified by nurses include lack of time (97%), training (53%), educational materials (42%), and administrative support (29%)</p> <p>Barriers identified by administrators- lack of training (49%), materials (42%), classroom time (40%), funds (40), or staff time (34%).</p>	<p>Respondents felt that schools should offer weight management services.</p> <p>There is a need to reduce barriers to providing the services.</p> <p>Need more training for nurses, primary and secondary prevention programs.</p> <p>80% of administrators and 84% of nurses said they would use weight-related materials or training if available from the Dept. of Education.</p> <p>"The majority of school administrators and nurses believe that being overweight affects the physical, social, and emotional health of children."</p>

**REVIEW ARTICLE**  
**Weight Management**

Article (50)	Study Design	Recommendations	Conclusions/Comments
<p>New trends in weight management.</p> <p>St. Jeor ST.</p> <p>J Am Diet Assoc 1997; 97 (10): 1096-1098.</p>	<p>Commentary article on the newest trends in weight management and suggested guidelines to reduce the prevalence of overweight and obese Americans.</p>	<p>Obesity should be defined as a chronic disease (and should be reworded in the Medicare regulation).</p> <p>Pharmacotherapy is recommended for patients with high risk (BMI<math>\geq</math>30 or <math>\geq</math>27 with comorbidities) and surgical options are recommended for patients with extremely high risks (BMI<math>\geq</math>40 or <math>\geq</math>35 with comorbidities).</p> <p>New options should be provided for patients to encourage better decisions and individualization of therapy based on health profile and acceptance of long-term treatment plan.</p> <p>Emphasis should be placed on both a healthy diet and increased physical activity in every weight loss program.</p> <p>A new focus should be placed on weight maintenance (interventions to maintain overall energy balance will be less demanding than those requiring larger, sustained energy deficits).</p> <p>Americans need to adopt a more active lifestyle (30 cumulative minutes or more of moderate-intensity daily activity).</p>	<p>New therapies, such as pharmacotherapy, surgical interventions, and diet modifications with meal replacements and new foods should be carefully evaluated and recommended by dietitians only as adjunctive to healthful diets and increasing activity patterns (as well as the use of BMI to assess risk).</p> <p>Research needs to be conducted to understand the increasing obesity prevalence in minority populations (differential expressions of body types, energy requirements, biochemical abnormalities exacerbating disease risk, and genetic influences).</p> <p>Patient's weight loss outcomes and effects must be documented as well as long-term weight maintenance must be monitored.</p>

## Weight Management

Article (51)	Study Design	Intervention	Outcomes	Comments
<p>Evaluation of a weight management intervention program in adolescents with insulin dependent diabetes mellitus</p> <p>Thomas-Dobersen, D et al</p> <p>Journal of the American Dietetic Association</p> <p>May 1993 Volume 93 Number 5 (535-540)</p>	<p>Sample: n= 20</p> <p>Experimental = 11 Mean Age = 13.9 121% overweight</p> <p>Control = 9 Mean Age = 15.2 126% overweight</p> <p>Case control: random assignment to experimental &amp; control groups <b>NOT</b> possible Inclusion criteria: 12-18 yrs old w/ IDDM for 1+ yrs</p> <p>Insulin requirement of .9-1.5 units/kg body wt</p> <p>12 mo. mean HgbA &lt;17%</p> <p>Relative wt 110% greater of mean value for age &amp; sex or a tricep skin fold &gt;85% for age &amp; sex</p> <p>Data collected at baseline, 3 months and 15 months.</p>	<p>SHAPEDOWN program as described by Mellin et al.</p> <p>14 (1.5 hr) weekly sessions with subject and 13 separate group sessions for parents. All sessions were taught by a dietitian, a psychologist, or a child health associate.</p>	<p>Psychometric measures, weight related behaviors, nutrition knowledge, and metabolic parameters were measured. No significant differences at baseline. One subject was dropped. Unable to collect data on 2 SHAPEDOWN subjects and partial data on 1 subject from the standard treatment group.</p> <p>Change in % overweight at 15 months was – 3% for experimental and +.9% for control. The difference was not statistically significant.</p> <p>Positive correlation between change in relative weight and changes in fat folds and skin measurement. Data confirms validity of tricep skin fold measure as an index of obesity.</p> <p>Negative correlation between relative wt. and obesity related behaviors, which indicates that those who displayed greater behavior changes had greater wt. loss</p>	<p>Program improved body image and self-esteem for teens with IDDM &amp; these long-term changes lasted 1+ years after the intervention. The program was not more effective at promoting long-term weight loss.</p> <p>This is a small study and is in conflict with other published data regarding the SHAPEDOWN program. The authors speculate that the participants' degree above the BMI or the lack of a mandated concurrent parent group had a negative impact on the study results.</p>

**California Obesity Prevention Initiative  
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INTERVENTION STUDIES**

**PEDS**

Article (52)	Study Design	Recommendations	Conclusions/Comments
<p>Obesity Evaluation and Treatment: Expert Committee Recommendations</p> <p>Barlow, S.E.; Dietz, W.H.</p> <p>Pediatrics (Sept. 1998) 102 (3); 1-11</p>	<p>Comprehensive evidence-based review and recommendations for pediatric obesity by a committee convened by the Maternal and Child Health Bureau, Department of Health and Human Services (DHHS) and Health Resources and Services Administration (HRSA).</p>	<ul style="list-style-type: none"> <li>• Children with a BMI <math>\geq</math> 85<sup>th</sup>ile with complications of obesity or with a BMI <math>\geq</math> 95<sup>th</sup>ile, with or without complications, undergo evaluation and possible treatment.</li> <li>• Clinicians should be aware of rare exogenous causes of obesity.</li> <li>• They should screen for complications of obesity including hypertension, dyslipidemias, orthopedic disorders, sleep disorders, gall bladder disease, and insulin resistance.</li> <li>• Evaluation recommendations include: patient and family readiness, assessment of diet and physical activity.</li> <li>• Primary goal of treatment should be healthy eating and activity.</li> </ul>	<p>This is a comprehensive evidenced-base review with detailed recommendations by an expert committee on pediatric obesity. Highly recommended reading.</p>

## Peds

Article (53)	Study Design	Intervention	Outcomes	Comments
<p>Parental Neglect during childhood and increased risk of obesity in young adulthood</p> <p>Lissau, Inge &amp; Thorkild, IA Sorensen</p> <p>The Lancet (1994) 343; 324-326</p>	<p>Sample: N= 1258 children 9-10 years old</p> <p>N=881 children follow-up 10 years later</p> <p>Prospective, population-based study</p> <p>To examine the influence of parental care in childhood on the risk of obesity in the offspring in young adulthood.</p>	<p><u>Part I:</u> Questionnaires distributed to 1) form teacher 2) school nurse or doctor and 3) child's parent or guardian. Physical measurements: ht, wt., &amp; age.</p> <p><u>Part II:</u> Questionnaires sent to children now 20-21 years old to obtain ht. and wt.</p>	<p>Family structure had no significant effect on the likelihood of obesity in young adulthood.</p> <p>Parental support and children receiving no support had a highly significant effect on the child's risk of obesity in young adulthood.</p>	<p>Parental neglect during childhood predicts a greatly increased risk of obesity in young adulthood. This association, was stronger than other psychosocial risk factors such as parental education or occupation, quality of dwelling, or child's school performance.</p> <p>Neither overprotective parental support nor family structure was significantly associated with the risk.</p>

## Peds

Article (54)	Study Design	Intervention	Outcomes	Comments
<p>Insurance reimbursement for the treatment of obesity in children</p> <p>Tershakovec, AM et al</p> <p>Journal of Pediatrics (1999) 134; 573-577</p>	<p>Sample: N=191 children 10 years old 46% black 65% female</p> <p>Enrolled in the Children's Hospital Weight Management Program (WMP).</p> <p>Cross-sectional survey</p> <p>The purpose is to evaluate third party payer reimbursement rates for a pediatric WMP for obese children and associations among child characteristics, insurance policy type, and reimbursement rates.</p>	<p>Insurance reimbursement information was obtained from Children's Health Care Associates.</p> <p>Insurance types were grouped into 5 categories: Blue Shield Indemnity Insurance, Commercial Indemnity Insurance, Commercial Managed Care, Medicaid-Managed Care, or Medical Assistance fee for service.</p>	<p>Median reimbursement rate was 11% and varied widely (0%-100%)</p> <p>Reimbursement rates differed significantly among policy types.</p> <p>Rates did not differ between boys and girls or white and black children nor with degree of obesity.</p>	<p>WMP for children are needed; however, unless insurance company policies change, it will not be financially viable for health care providers to offer obesity treatment services for children.</p>

**California Obesity Prevention Initiative  
Health Systems Work Groups  
INTERVENTION STUDIES**

**Economic Burden**

<b>Article (55)</b>	<b>Study Design</b>	<b>Intervention</b>	<b>Outcomes</b>	<b>Comments</b>
<p>Obesity, Health Services Use, and Health Care Costs of a Health Maintenance Organization</p> <p>Quesenberry CP, Caan B, Jacobson MS.</p> <p>Arch Intern Med. 1998; 158: 466-472</p>	<p>1993 Health Survey of larger HMO</p> <p>Sample: Age-sex stratified random sample survey of Northern California Kaiser Permanente members: 19,726/33,888 responded (58.2% response rate)</p>	<p>Questionnaire items were modeled after the National Health Interview Survey.</p> <p>Objective: To quantify the association between BMI and health services use and costs stratified by age and use source at patient level.</p> <p>Computerized data bases were used were utilized correlating hospitalizations, laboratory services, outpatient visits, outpatient pharmacy, radiology services, and the direct costs of providing these services during 1993 with BMI.</p>	<p>Positive association between BMI and annual rates of inpatient days, number and costs of outpatient visits, costs of outpatient pharmacy and laboratory services as well as total costs (<math>p \leq .003</math>).</p> <p>Relative to BMI of 20-24.9, mean annual total costs were 25% greater for those with BMI of 30-34.9 (rate ratio, 1.25, 95% CI: 1.10-1.41), and 44% greater among those with BMI of 35 or greater (rate ratio: 1.44, 95% CI: 1.22-1.71).</p> <p>Association between elevated BMI and increased risk for coronary artery disease, hypertension, and diabetes largely explained these increased costs.</p>	<p>Elevated BMI shows a significant positive correlation with a variety of direct health care costs. There is a great potential to reduce health care costs through obesity prevention efforts.</p> <p>This study demonstrates a clear association between BMI and annual rates of outpatient visits, radiology, laboratory, pharmacy services, and total cost of care for both inpatient and outpatient care. These increased costs are largely attributable to costs associated with the major causes of morbidity associated with obesity. The strongest associations are with CHD, followed by diabetes and hypertension.</p> <p>There is a need for further research in this area, especially at a statewide level.</p>



## Economic Burden

Article (56)	Study Design	Intervention	Outcomes	Comments
<p>Estimated Economic Costs of Obesity to U.S. Business</p> <p>Thompson, D et al</p> <p>Am. J. Health Promo. (1998) 13(2); 120-127</p>	<p>Retrospective method of risk attribution to ascertain obesity attributable expenditures in the U.S. in 1994.</p>	<p>Data were obtained from a variety of secondary sources including: National Health Interview Survey, reports from the Bureau of Labor Statistics, other federal agencies, and published literature.</p> <p>Attention focused on employees between the ages of 25 and 64.</p> <p>Classified according to BMI:  BMI &lt; 25: Non-obese  BMI = 25-28.9: Mildly Obese  BMI ≥ 29: Moderate to Severely Obese</p>	<p>Cost of obesity to U.S. businesses in 1984 was estimated to total \$12.7 billion:</p> <p>Breakdown of cost:  \$2.6 billion: mild obesity  \$10.1 billion: moderate to severe obesity</p> <p>Health insurance expenditures constituted 43% or \$10.1 billion of the total on U.S. business spending on coronary heart disease, hypertension, Type 2 diabetes, hypercholesterolemia, stroke, gallbladder disease, osteoarthritis of the knee, and endometrial cancer.</p> <p>\$2.4 billion was spent on obesity attributable business expenditures on paid sick leave, \$1.8 billion on life insurance, and \$800 million disability insurance.</p>	<p>Health related economic costs of obesity to U.S. business is substantial.</p> <p>Represents approximately 5% of total medical care costs.</p> <p>Study is now out of date and given the increased prevalence of obesity and inflation costs could be assumed to be substantially higher in 2002.</p> <p>Further research is needed to determine the cost-effectiveness of work site weight management programs and other efforts to reduce obesity.</p>

## Economic Burden

Article (57)	Study Design	Intervention	Outcomes	Comments
<p>Economic Burden of Obesity in Youths Aged 6 to 17 Years: 1979-1999</p> <p>Wang G, Dietz WH</p> <p>Pediatrics Vol. 109 No. 5 May 2002</p> <p><a href="http://www.pediatrics.org/cgi/content/full/109/5/e81">http://www.pediatrics.org/cgi/content/full/109/5/e81</a></p>	<p>Retrospective Study looking at the National Hospital Discharge Survey, 1979-1999.</p>	<p>Analysis of NHDS data for economic costs of obesity associated diseases in youth, 6-17 years of age.</p> <p>Diseases included: diabetes, obesity, sleep apnea, and gallbladder disease, plus some secondary diagnoses.</p> <p>Obesity associated hospital costs were estimated from discharges with obesity listed as principal or secondary diagnosis.</p>	<p>Obesity-associated annual hospital costs (based on 2001 US dollar) increased more than three-fold; from \$35 million (0.43% of total hospital costs) during 1979-1981 to \$127 million (1.7% total hospital costs) during 1997-1999.</p> <p>From 1979-1981 to 1997-1999 the percentage of discharges with obesity associated diseases increased.</p> <p>The discharges for diabetes nearly doubled (from 1.43% to 2.36%), obesity and gallbladder diseases tripled (0.36% to 1.07% and 0.18% to 0.59%, respectively), and sleep apnea increased fivefold (0.14% to 0.75%). Asthma and some mental disorders were also listed when obesity was a secondary diagnosis.</p>	<p>The proportion of pediatric discharges associated with obesity has increased dramatically over the past 20years.</p> <p>This increase in pediatric obesity has led to significant increases in hospital associated costs.</p> <p>It is critical that attention be paid to obesity prevention in youth.</p>

## Economic Burden

Article (58)	Study Design	Intervention	Outcomes	Comments
<p>Current Estimates of the Economic Cost of Obesity in the United States</p> <p>Wolf AM, Colditz GA</p> <p>Obesity Research Vol. 6 No. 2 1998: 97-106</p>	<p>Retrospective correlation study using a variety of national databases including the 1988 and 1994 National Health Interview Survey(NHIS), the Nurse's Health Study, and the Health Professionals Follow-Up Study.</p>	<p>A prevalence-based approach to the cost of illness was used to estimate the economic costs in 1995 dollars attributable to obesity for: type 2 diabetes, CHD, HTN, gallbladder disease; breast, endometrial and colon cancer; and osteoarthritis.</p> <p>Additionally excess physician visits, work lost days, restricted activity, and bed days attributable to obesity were analyzed cross sectionally using the 1988 and 1994 NHIS data.</p> <p>Study looked at both "direct" and "indirect" costs.</p> <p>Direct costs include: personal health care, hospital care, physician services, allied health services, and medication.</p> <p>Indirect costs include: lost output as a result of reduction or cessation of productivity due to morbidity and mortality (such as excess work days lost).</p>	<p>The total cost attributable to obesity amounted to \$99.2 billion dollars in 1995 in the U.S.</p> <p>Approximately \$51.64 billion of those dollars were direct medical costs and the indirect costs (excluding CHD and HTN) amounted to \$47.56 billion.</p> <p>The direct costs of obesity represent 5.7% of the U.S. health expenditure in 1995.</p> <p>Approximately 63% of the direct costs associated with obesity are from type 2 diabetes, 14% from CHD, 8% from osteoarthritis, 5% from gallbladder disease, 6% from HTN, and 4% from all cancers.</p> <p>The indirect economic impact of obesity was similar to the impact of cigarette smoking.</p>	<p>Both the economic and personal impacts of overweight and obesity are substantial and are costing the U.S. health care system billions of dollars annually.</p> <p>Because obesity rates have continued to rise since 1995, one can estimate that health care costs have also risen further.</p> <p>It must be kept in mind that these studies are estimates and the authors state that they may actually be underestimates of the full impact of the costs of obesity on health care costs.</p>

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## Appendix A

### The California Department of Health Services Physical Activity Guidelines for Children, Youth, and Adults

(Developed by the Physical Activity and Health Initiative)

<b>Preschool Children</b>	<p>All preschool children should participate every day in a form of physical activity appropriate for their developmental level and physical health status. This should occur in the context of home, preschool, day care, or other care giving settings.</p> <p>Free play designed to provide opportunities for each child to develop fundamental motor skills and to reach his or her potential at his or her own rate is preferable to structured sessions.</p> <p>As much free play as possible should take place in a safe outdoor environment.</p> <p>In structured sports programs, participation, and enjoyment should be emphasized rather than competition and victory.</p> <p>Emphasis should be placed on the promotion of physical activity as a natural and lifelong activity of healthy living. Setting, format, rules, and equipment should be modified accordingly.</p> <p>Sedentary behaviors such as watching television or videos should be kept to a minimum (no more than 1 hour per day total).</p>
<b>Children (5-12 years)</b>	<p>Elementary school children should accumulate at least 30-60 minutes of age and developmentally appropriate physical activity on all, or most days of the week.</p> <p>An accumulation of more than 60 minutes, and up to several hours per day, of age and developmentally appropriate activities is encouraged for elementary school children. Given that children have demonstrated patterns of intermittent activity, accumulation of physical activity over the day seems a practical approach.</p> <p>Some of the child's activity each day should be in periods lasting 10-15 minutes or more that includes moderate to vigorous activity. Intermittent activity involves alternating bouts of moderate to vigorous activity with periods of rest and recovery.</p> <p>Extended periods of inactivity are discouraged for children. Sedentary behaviors such as watching television or videos, playing video games, and leisure surfing of the internet should be kept to a minimum (no more than 1 hour per day total).</p> <p>A variety of physical activities are recommended for children. As many of these activities as possible should take place in a safe outdoor environment.</p>
<b>Youth (13-17 years)</b>	<p>All adolescents should be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities.</p> <p>Adolescents should engage in at least 60 minutes of moderate to vigorous physical activity per day on most days of the week. Thirty minutes of physical activity per day should be viewed as a minimum. One hour per day represents a more favorable level.</p> <p>Physical activity can be performed in a continuous fashion or intermittently throughout the day.</p>
<b>Adult</b>	<b>General Health Benefits:</b>

<b>(18-59 years)</b>	<p>All adults should accumulate a minimum of 30 minutes of at least moderate intensity physical activity on most, if not all, days of the week.</p> <p>Intermittent moderate to vigorous activities during the day should last from 8-10 minutes, although shorter bouts may be needed when first starting a physical activity program.</p> <p>Integrating physical activity into one's daily lifestyle and routine is an effective way to accumulate physical activity over the day.</p> <p><b>Cardiorespiratory Fitness, Body Composition, and Additional Health Benefits:</b> Adults should engage in moderate to vigorous intensity endurance activity for 20-60 minutes 3-5 days per week. 60 minutes per day may be needed to maintain body weight and reduce the risk of weight gain.</p> <p>Endurance activity is any activity that uses large muscle groups, which can be maintained continuously, and is rhythmical and aerobic in nature. Examples include walking-hiking, running-jogging, cycling-bicycling, cross-country skiing, aerobic dance/group exercise, rope skipping, rowing, stair climbing, swimming, skating, and various endurance game activities or some combination thereof.</p> <p>Duration is dependent on the intensity of the activity; thus, lower-intensity activity should be conducted over a longer period of time (30 minutes or more), and, conversely, higher-intensity activity should be done over a shorter period of time (20-30 minutes).</p> <p>Moderate-intensity activity is recommended for adults not training for athletic competition.</p> <p style="text-align: center;"><b>Muscular Strength, Muscular Endurance, Skeletal, and Flexibility Benefits</b></p> <p>One set of 8-10 resistance training exercises that condition the major muscle groups should be performed 2-3 days per week.</p> <p>Most persons should complete 8-12 repetitions of each exercise; however, 10-15 repetitions may be more appropriate for persons who are older and/or more frail (approximately 50-60 years of age and above).</p> <p>Flexibility exercises that stretch the major muscle groups should be performed a minimum of 2-3 days per week.</p>
<b>Older Adult (≥ 60 years)</b>	<p>All older adults should meet the guidelines listed above for adults in addition to the recommendations below.</p> <p>Balance, agility, mobility, coordination, and reaction time exercises should be performed by persons experiencing a diminished capacity in these areas of function.</p> <p>Physical activity level should be increased more gradually in older adults to decrease the risk for soreness, discomfort, and injury. Older adults who have been sedentary should start with physical activity sessions of short duration and light intensity.</p> <p>Older adults with existing medical conditions or those who are unsure about their safety during physical activity should first consult their physician before embarking on a physical activity program.</p>

## Appendix B

### **Recent Quantitative Physical Activity Recommendations from U.S. and International Health Authorities**

(Developed by the Physical Activity and Health Initiative)

<b>Organization, Policy Document</b>	<b>Type (mode) of Activity</b>	<b>Frequency</b>	<b>Duration</b>	<b>Intensity</b>	<b>Other Recommendations</b>
<b>Adults</b>					
Centers for Disease Control and Prevention, 1995 Position Statement	Traditional and lifestyle physical activities including walking, gardening, household and yard chores, climbing stairs.	Most, if not all, days of the week.	At least 30 minutes.	At least moderate intensity.	Activity can be accumulated with shorter activity bouts throughout the day.
National Institutes of Health, 1997 Consensus Statement	Individual preference including lifestyle activities.	Most, if not all, days of the week.	At least 30 minutes.	At least moderate intensity.	Activity can be accumulated with shorter activity bouts throughout the day.
American Heart Association, 1996 Position Statement (Health benefits)	Dynamic exercise of large muscles.	3-6 days per week.	30-60 minutes.	40-60% maximal aerobic capacity (light).	
American Heart Association, 1996 Position Statement (Health and Fitness benefits)	Dynamic exercise of large muscles.	Most days of the week.	30 minutes.	60-75% maximal aerobic capacity (moderate).	Activity can be accumulated with shorter activity bouts throughout the day.
American Heart Association, 1996 Position Statement	Resistance training exercises.	2 days per week.	10-15 repetitions per exercise.	Moderate to high intensity.	8-10 different exercises using large muscle groups.
American Cancer Society, 1996 Prevention Guidelines	Traditional and lifestyle physical activities including walking, gardening, household and yard chores, and climbing stairs.	Most days of the week.	30 minutes or more.	Moderate.	Strive to stay within a healthy weight range.

American College of Sports Medicine, 1998 Position Stand	Any activity that uses large muscle groups, can be done continuously, is rhythmic and aerobic in nature.	3-5 days per week.	20-60 minutes.	55/65%-90% maximal heart rate or 40/50%-85% maximal aerobic capacity.	Minimum of 10-minute bouts can be accumulated throughout the day.
American College of Sports Medicine, 1998 Position Stand	Resistance training exercises.	2-3 days per week.	One set of 8-12 repetitions per exercise.	Light to moderate intensity.	10-15 repetitions may be more appropriate for older and more frail persons.
American College of Sports Medicine, 1998 Position Stand	Flexibility exercises for major muscle groups.	2-3 days per week.	Maintain stretched position for 10-30 seconds.	Never stretch beyond mild discomfort.	Appropriate static and dynamic techniques can be used.
National Institute on Aging, 1998 Exercise Guide	Any activity that raises the heart rate and breathing for extended periods of time.	Most or all days of the week.	At least 30 minutes.	Moderate to vigorous.	Shorter sessions of no less than 10 minutes each can be accumulated throughout the day.
National Institute on Aging, 1998 Exercise Guide	Strength exercises for the major muscle groups.	At least 2 days per week.	1-2 sets of 8-15 repetitions each.	Light to moderate.	First increase the number of times you do the exercise, then Increase the weight at a later session.
National Institute on Aging, 1998 Exercise Guide	Stretching exercises for the major muscle groups.	At least 3 days per week up to every day.	Repeat each stretch 3-5 times; hold stretched position for 10-30 seconds; total session lasts 15-30 minutes.	Never stretch beyond mild discomfort.	Move slowly into each position, never jerk into position.
Health Education Authority (U.K.), 1996 Consensus Recommendation	Traditional and lifestyle physical activities including walking, gardening, household and yard chores, and climbing stairs.	At least 5 days per week.	30 minutes per day.	Moderate.	Activity can be accumulated with shorter activity bouts throughout the day.

Health Canada, 1998 Physical Activity Guide	Activity using large muscle groups.	4-7 days per week.	30-60 minutes.	Moderate to vigorous.	Shorter sessions of no less than 10 minutes each can be accumulated throughout the day.
Active Australia, 1998 Framework for Action	Traditional and lifestyle physical activities including walking, gardening, household and yard chores, and climbing stairs.	Most days of the week.	30 minutes.	Moderate.	Shorter sessions of no less than 10 minutes each can be accumulated throughout the day.
Institute of Medicine, 2002 Dietary Reference Intakes Report	Activities of daily living, lifestyle physical activities, and traditional exercise.	Daily.	60 minutes.	Moderate to vigorous.	Various types of physical activity can be accumulated throughout the day.
<b>Preschool Children</b>					
American Academy of Pediatrics, 1992 Policy Statement	Developmental and physical health status appropriate physical activity. Free play designed to develop motor skills. Active exploration in a safe environment.	Daily.	Not Applicable.	Not Applicable.	Emphasize participation and enjoyment rather than competition.
<b>Children/Adolescents</b>					
National Association for Sport and Physical Education, 1998 Statement of Guidelines	Age and developmentally appropriate physical activity.	All or most days of the week.	At least 30-60 minutes up to several hours per day.	Moderate to vigorous.	Shorter sessions of 10-15 minutes each can be accumulated throughout the day; extended periods of physical inactivity are discouraged; variety of activities should be performed.
International Consensus Conference on Physical Activity Guidelines for Adolescents, 1994 Consensus Statement (Guideline 1)	Play, games, sports, work, transportation, recreation, physical education, or planned exercise in context of family, school, and community activities.	Daily or nearly every day.	At least 30 minutes.	Moderate to vigorous.	Activities should be enjoyable, involve a variety of muscle groups, and include some weight bearing activities.

International Consensus Conference on Physical Activity Guidelines for Adolescents, 1994 Consensus Statement (Guideline 2)	Activities that use large muscle groups.	3 or more days per week.	20 minutes or longer.	Moderate to vigorous.	A diversity of activities should be performed.
Centers for Disease Control and Prevention, 1997 Guidelines (Guideline 1)	Play, games, sports, work, transportation, recreation, physical education, or planned exercise in context of family, school, and community activities.	Daily or nearly every day.	At least 30 minutes.	Moderate to vigorous.	Activities should be enjoyable, involve a variety of muscle groups, and include some weight bearing activities.
Centers for Disease Control and Prevention, 1987 Guidelines (Guideline 2)	Play, games, sports, work, transportation, recreation, physical education, or planned exercise in context of family, school, and community activities.	Daily or nearly every day.	At least 30 minutes.	Moderate to vigorous.	Activities should be enjoyable, involve a variety of muscle groups, and include some weight bearing activities.
Health Education Authority (U.K.), 1997 Policy Framework	Activities that are part of transportation, physical education, play, games, sport, recreation, work, or structured exercise.	Most days of the week.	30-60 minutes.	Moderate to vigorous.	30 minutes should be seen as a minimum; activity may be intermittently accumulated throughout the day.
Institute of Medicine, 2002 Dietary Reference Intakes Report	Lifestyle physical activities and traditional exercise.	Daily.	60 minutes or more.	Moderate to vigorous.	Various types of physical activity can be accumulated.